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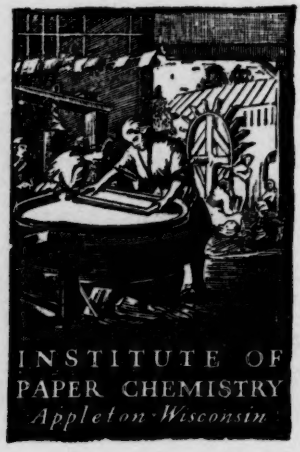
BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

FEBRUARY · 1954
Volume 24 Number 6

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Books and Pamphlets Added to the Library During January

ALMANACS

The WORLD ALMANAC and book of facts for 1954. Ed. by Harry Hansen. 69th year of publication. New York, New York World-Telegram, c1954. 896 p.

AQUATIC PLANTS

FASSETT, NORMAN C. A manual of aquatic plants. New York, McGraw-Hill Book Co., 1940. 382 p.

MUENSCHER, WALTER CONRAD. Aquatic plants of the United States. Ithaca, N.Y., Comstock, 1944. 374 p.

CELLULOSE

GOLOWA [O. P.] and IWANOW [W. I.] Über das Molekulargewicht der Zellulose. [Übersetzt aus dem Russischen von Rudolf Wittwer] Berlin, Akademie-Verlag, 1953. 91 p.

CELLULOSE—DERIVATIVES

CHAMPETIER, G. Dérivés cellulosiques. Preface de Jacques Duclaux. 2e ed. Paris, Dunod, 1954. 270 p.

CHEMISTRY, ORGANIC

BEILSTEIN, FRIEDRICH KONRAD. Beilsteins Handbuch der organischen Chemie. 4. Auflage. Zweites Ergänzungswerk, die Literatur von 1920-1929 umfassend, herausgegeben und bearbeitet von Friedrich Richter. Berlin, etc., Springer-Verlag, 1953. 22. Band. 619 p.

ELECTRICITY

ABRAHAM, MAX. The classical theory of electricity and magnetism. Rev. by Richard Becker. Authorized translation by John Dougall. 2d ed. New York, Hafner Publ. Co. [1951] 289 p.

INSECTS

BETTEN, CORNELIUS. The caddis flies or Trichoptera of New York State, with special chapters by Blenda L. Kjellgren, Alfred W. Orcutt, and Marion B. Davis. New York State Museum bulletin no. 292. Albany, The University of the State of New York, 1934. 576 p.

NEEDHAM, JAMES G., TRAVER, JAY R., and HSU, YIN-CHI. The biology of mayflies, with a systematic account of North American species. Ithaca, N.Y., Comstock, 1935. 759 p.

ROSS, HERBERT H. The caddis flies, or Trichoptera, of Illinois. Bulletin of the Illinois Natural History Survey volume 23, article 1. Urbana, State of Illinois, Dept. of Registration and Education, 1944. 326 p.

MECHANICAL MODELS

MURPHY, GLENN. Similitude in engineering. New York, Ronald Press [c1950] 302 p.

NEWSPRINT

U. S. CONGRESS. HOUSE. *Committee on the Judiciary. Antitrust Subcommittee.* The newsprint problem. Final report . . . 83d Congress. 1st session. Washington, U. S. Govt. Print. Off., 1953. 54 p.

PAPER—SAMPLE BOOKS

THE STEVENS-NELSON PAPER CORPORATION, *New York.* Specimens: a Stevens-Nelson paper catalogue. New York, The Company [1953] 107 samples.

PAPER MAKING AND TRADE—ASSOCIATIONS

FINSKA PAPPERSINGENIÖRSFÖRENINGEN. Föredrag. Helsingfors, The Association, 1951. v. 10. 321 p.

PAPER MAKING AND TRADE—ECONOMICS

PENNSYLVANIA. UNIVERSITY. *Wharton School of Finance and Commerce. Industrial Research Department.* Capital requirements and operating ratios. The paperboard industry, 1949 and 1950. Prepared for the Mutual Security Agency. Productivity and Technical Assistance Division and U. S. Department of Labor. Bureau of Labor Statistics. Washington [processed] 1953. 47 p.

PLANTS—DISEASES

U. S. DEPARTMENT OF AGRICULTURE. Plant diseases, the yearbook of agriculture, 1953. Washington [U. S. Govt. Print. Off.] 1953. 940 p. + 32 col. plates on 16 leaves.

POLYMERS AND POLYMERIZATION

FLORY, PAUL J. Principles of polymer chemistry. Ithaca, N.Y., Cornell Univ. Press, 1953. 672 p.

PRINTING, PRACTICAL

U. S. GOVERNMENT PRINTING OFFICE. Theory and practice of

presswork. Apprentice training series. Orientation period. Washington [U. S. Govt. Print. Off.] 1948. 248 p.

PULP

JAYME, GEORG. Zellstoff 1939-1946; Sammlung der deutschen Literatur. Schriften des Vereins der Zellstoff- und Papier-Chemiker und -Ingenieure. Band 24. [Darmstadt] Der Verein, 1953. 145 p.

This is identical with section B of the FIAT review of German science, 1939-1946, Preparative organic chemistry, part III; author and subject indexes have been added.

STRAINS AND STRESSES

TIMOSHENKO, S. Theory of plates and shells. New York, McGraw-Hill Book Co., 1940. 492 p.

TRADE DIRECTORIES

PHILLIPS' paper trade directory of the world, 1954, with which is incorporated "Phillips' directory of paper makers of Great Britain and Ireland" and "Phillips' paper trade directory of the British Empire." London, S. C. Phillips & Co., c1954. 806 p.

VACUUM TUBES

DEKETH, J. Fundamentals of radio-valve technique; an introduction to the physical fundamentals, properties, designs and applications of radio-receiver and power-amplifier valves covering the technical development reached up to December 1947. [Translated by F. G. Garratt] Eindhoven (Netherlands), N. V. Philips' Gloeilampenfabrieken, 1949. 535 p.

WATERSHEDS

COLMAN, E. A. Vegetation and watershed management; an appraisal of vegetation management in relation to water supply, flood control, and soil erosion, sponsored by The Conservation Foundation. New York, Ronald Press [c1953] 412 p.

WOOD

DESCH, H. E. Timber, its structure and properties. 3d [rev.] ed. London, Macmillan; New York, St. Martin's Press, 1953. 350 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ADHESIVES

DETWILER, EARL B. Properties and application of amino resin adhesives and binders. J. Forest Products Research Soc. 3, no. 5: 46-9; discussion: 49, 218, 220 (December, 1953).

The paper gives a short history of the development of synthetic adhesives, followed by a description of amino resins, principal raw materials used in their manufacture, and their chief applications. The development of four modified urea resin adhesive binders (urea-formaldehyde resins with improved water resistance, gap-filling urea adhesives, fast clamping cold-set adhesives, and wet-strength resins) are described in some detail. Melamine resins are mentioned for their use as wet-strength resins and in the manufacture of decorative laminates; future uses for amino resin binders are listed. 2 tables and 4 references. E.S.

ALKALINE PROCESSES

HÄGGLUND, ERIK. The chemical reactions in the sulfate pulping process. Holz Roh- u. Werkstoff 11, no. 7: 251-7 (July, 1953). [In German]

Following a brief historical review of the development of the sulfate cooking process, some experiments with thiolignins (I) prepared under various conditions are described, and these lignins are compared with alkali lignin obtained with the same wood. The (I) have sulfur contents varying from 3.7 to 12%. In the (I) with low sulfur contents the sulfur may be present as thio ether sulfur, whereas in the (I) with high sulfur contents it is largely present as disulfide. The removal of carbohydrates by the alkaline cooking liquors is caused by a degradation resulting from their enolizable end groups, since methylglucoside is quite stable toward alkali under these cooking conditions. The pulp yield at 0, 15.6, and 31% sulfidity and temperatures from 150 to 170°C. is almost constant (50-50.5%) at the stage where the fibers begin to separate easily. However, for a given Roe number the yield increases with the sulfidity. The latter also affects the strength properties of the pulp, since with increasing sulfidity the strength of the pulp increases, whereas in the soda pulping process the strength properties pass through a maximum. In conclusion, the utilization of by-products in the sulfate process is briefly discussed. 3 tables, 10 diagrams, and 14 references. F.E.B.

ANTIOXIDANTS

KRAYBILL, H. R., and DUGAN, L. R., JR. Antioxidants; new developments for food use. J. Agr. Food Chem. 2, no. 2: 81-4 (Jan. 20, 1954).

The use of antioxidants in fats and in foods containing fats has increased greatly during the past 10 years. Several substances isolated from natural sources have been found effective in increasing the keeping time of fats as measured by the active oxygen method, but none of them has the important property of "carry-through." Two synthetic antioxidants, butylated

hydroxyanisole and 2,6-di-*tert*-butyl-*p*-cresol, have excellent carry-through properties. Butylated hydroxyanisole is now used extensively in lard and other edible fats, breakfast cereals, fried corn crisps, potato chips, and nuts, and to treat paraffin-coated wrappers and paper wrappers used in food containers. It is estimated that currently at least 50% of the federally inspected lard produced in this country is stabilized with this antioxidant. 67 references. E.S.

ASSOCIATIONS

ANON. Fédération Européenne des Fabricants de Carton Ondulé F.E.F.C.O. Papeterie 75, no. 9: 575, 577, 579, 581, 583, 585, 587, 589; no. 10: 647, 649, 651, 653, 655, 657; no. 11: 719, 721, 723, 725, 727, 729, 731 (September-November, 1953). [In French] *cf.* B.I.P.C. 23: 469.

An account of the annual meeting of the European federation of corrugated board manufacturers held at Baden-Baden, Germany in May, 1953 is presented. Abridgments of papers and their discussions are included. 1 table and 1 graph. E.S.

BARK

JENSEN, WALDEMAR, and RINNE, PEKKA. Studies on suberin. V. The constitution of phloionic acid from the suberin of *Quercus suber*. Paper and Timber (Finland) 35, no. 11: 407-8 (November, 1953). [In English] *cf.* B.I.P.C. 23: 390.

Further evidence is presented that the acid previously isolated by Jensen from the bark of *Quercus suber*, $C_{18}H_{34}O_6$, is phloionic acid and identical with the compound referred to by Zetzsche and co-workers. Phloionic acid has been confirmed to be 8,9-dihydroxyhexadecane-1,16-dicarboxylic acid. 2 tables and 8 references. E.S.

BEATER ADDITIVES

DAVIDSON, P. B. Beater additives in papermaking. Tappi 37, no. 1: 18-24 (January, 1954).

Several so-called beater additives have been evaluated for their influence on engine sizing of paper. The viscosity and D.S. of the cellulose and starch derivatives studied govern, to some extent, the "size additive" efficiency. The degree of sizing in a paper should be judged from the standpoint of its use requirements. This is particularly true when size additives are used, because they appear to be somewhat specific toward certain types of writing inks or aqueous solutions such as diazo or photosensitive coating solutions. Size additives also exhibit specificity toward different papermaking fibers. The rosin sizing of sulfite and sulfate papers can be significantly improved by the inclusion of some types of size additives; however, these appear to have little value as "sizing improvers" in rag papers. In rag-sulfite pulp mixtures the size additive efficiency decreases with increased rag fiber content of the paper. No conclusions are drawn from this work except that too little is known about the surface chemistry of various papermaking fibers. 7 tables and 7 diagrams. E.S.

BIOCHEMICAL TESTING

KIRK, PAUL L., and DUGGAN, E. L. Biochemical analysis. Anal. Chem. 26, no. 1: 163-76 (January, 1954).

The authors present a review of the literature in the field of biochemical analysis published during the past two years, including sections on chromatography, ion exchange, and electrophoresis. 534 references. R.A.S.

BIOGRAPHY

VOORN, HENK. Alexander Mitscherlich, inventor of sulphite wood pulp. Paper Maker [U. S.] 23, no. 1: 41-4 (February, 1954).

A biography of Alexander Mitscherlich, credited with the invention of sulfite pulp, is presented; the most distinguishable unit of his process is the tower, still today the unmistakable characteristic of sulfite mills. 4 illustrations. R.A.S.

BIRCH

BRYDE, ØYVIND. Better utilization of birchwood? Norsk Skogind. 7, no. 12: 458-60 (December, 1953). [In Norwegian]

The author discusses the possibilities of the slow-growing birches in western and northern Norway as a raw material for dissolving pulp, wallboard, or semichemical pulp; none of these prospects is considered very encouraging for economical reasons. However, the new Rheinau wood saccharification process may offer better chances and warrant a closer investigation. 1 reference. E.S.

BLEACHING

CHAMBERS, R. J. Gaspesia's new bleach plant improves pulp quality. Pulp Paper Mag. Can. 54, no. 13: 90-5 (December, 1953); *cf.* B.I.P.C. 24: 262.

A detailed description of the new high-density Kamyr bleach plant at Chandler, Que. is given. The plant was constructed with the assistance of French capital on a co-operative arrangement. The five-year deal guarantees those putting up the funds an agreed tonnage of pulp at a fixed price without entitling them to the exclusive use of all the pulp produced. The general layout of the sulfite mill and its connection with the new bleach plant, the new building, handling of raw materials, bleach-liquor preparation, electric power changes and installations, the central control room, unusual construction features, and personnel of the new plant are discussed. 8 illustrations. E.S.

BLEACHING—SULFATE

PINEO, MALCOLM B. Kraft pulp bleaching. Paper Trade J. 138, no. 4: 14-20 (Jan. 22, 1954).

The author reviews the present status of sulfate bleaching, covering in some detail the five basic stages (acid chlorination, caustic extraction, oxidation with hypochlorite, caustic extraction, and hypochlorite) and their implications, soaking chests, pulp-washing efficiency, and a sixth stage with chlorine dioxide or peroxides (superbleaching agents) for obtaining very high brightnesses (88-90%). 3 tables. E.S.

BOARD

MILLER, H. C. L. Chipcore—its characteristics and production. J. Forest Products Research Soc. 3, no. 5: 149-52; discussion: 152 (December, 1953); *cf.* B.I.P.C. 24: 90.

Chipcore, made from kiln-dried leftovers in furniture operations, is de-

scribed, and its properties are discussed. Comparative test results on the material as produced from many wood types and sources are presented with a description of a representative Chipcore manufacturing plant now under construction. 6 graphs and 1 flowsheet. E.S.

PATTON, E. A. Ponderosa pine woodwork residues for dry formed particle board. J. Forest Products Research Soc. 3, no. 5: 146-7; discussion: 147 (December, 1953); *cf.* B.I.P.C. 20: 915.

A description is given of Prespine, a phenolic resin-bonded aggregate of ponderosa pine particles produced by Curtis Companies Inc., Clinton, Iowa, including board properties and uses, raw material, panel-forming process, and additional residue disposal. R.A.S.

RUNCKEL, W. J. Douglas fir slabs, edgings and bark—wet continuous process hardboard. J. Forest Products Research Soc. 3, no. 5: 148, 228 (December, 1953); *cf.* B.I.P.C. 23: 235.

The author describes the production of Allwood hardboard using green unbarked slabs, edgings, and other chippable forms of material resulting from sawmill operations. A variety of species are used without selection or segregation, although the preponderant source of material is Douglas-fir. Bark constitutes over 25% of the material used in the process. E.S.

BOARD—CONVERSION

AMERICAN BOXMAKER. Spaciousness is key at Forsberg Box. Am. Boxmaker 43, no. 1: 19-22 (January, 1954); *cf.* B.I.P.C. 24: 263.

The production line for the manufacture of folding paper boxes at the Forsberg Paper Box Co., Madison, Wis., which also makes corrugated and setup boxes and paper tubes, is described. The raw material, boxboard, enters the one-story plant at the northwest corner; follows a straight line through printing presses, die cutters, and gluers; and the finished product emerges at the southwest corner of the building. An elevator transports some of the finished products to the basement for storage or for the waxing of certain cartons. 10 illustrations and 1 floor plan. R.A.S.

ANON. Million-boxes-per-day operation. Boxboard Containers 72, no. 733: 18-22 (January, 1954).

The series of inline equipment integrated into one carton-making machine at the Godfrey Box Co., Godfrey, Ill. (a subsidiary of Alton Box Board Co.) contains the following units: a Sperry six-color rotogravure press and attached rotary blankers, an automatic two-roll unwind stand, a butt splicer, a scrap removal system, and a Dilts rewind stand, employed for printed jobs that are shipped elsewhere for die cutting. The machinery produces six-color printed boxboard containers completely manufactured exclusive of gluing at the rate of approximately 62,000 cartons/hour. 9 illustrations. R.A.S.

BOARD, LAMINATED

WHITON, ARTHUR L. Craveneer as used in the packaging field. J. Forest Products Research Soc. 3, no. 5: 103-4 (December, 1953); *cf.* B.I.P.C. 17: 438.

The development of Craveneer is described; the product is composed of a sheet of single-ply veneer and two sheets of 42-pound kraft paper. One ply

of paper is laminated to each side of the veneer as it comes directly from the lathe, and the combined sheet is then put through a Coe dryer. This drying operation, after fabrication, eliminates practically all normal shrinkage. 1 table. E.S.

BOARD CONDITIONING

LÖFGREN, BROR E. Heat treatment and humidification of wallboard. Norsk Skogind. 7, no. 12: 444-51 (December, 1953). [In Swedish; English summary]

The demands on the "stability" of wallboard during recent years have been considerably increased; the author includes in this term such characteristics as strength and the resistance to water absorption, swelling and, in the case of insulating boards, the tendency to spontaneous ignition during transport and storage. Water absorption, strength, and swelling can be influenced by the addition of chemicals (e.g., sizes, oils, or synthetic resins); however, to obtain a high-quality product, a tempering process of the board in the final stage of manufacture is essential. Experience has shown that a high temperature gives better results than the use of low temperatures. This fact involves certain complications because the heat treatment has to be carried out pretty close to the ignition temperature of the boards. The author describes recent developments in the apparatus employed for the tempering stage, including a cooling table for the insulating board leaving the heat-treatment chamber; the board is first moistened by a shower before it enters the boxlike construction of the cooling table where the required quantity of cooling air is sucked through the boards under pressure. For the manufacture of hardboard, the importance of a high velocity of the circulating gas in the tempering chamber is emphasized, as well as the free passage of the gas along the entire surface of the boards. Chambers in which the boards are placed horizontally offer certain advantages over those in which they are hung in upright position, provided the plates do not come in contact with each other thereby obstructing the gas circulation. The new design also includes alarm devices to warn of abnormal rises in temperature and automatic fire-extinguishing equipment. In case of a local temperature rise, the circulating fans should under no conditions be stopped. The heat treatment of hardboard is followed by humidification in a separate chamber, the design of which is described. The conditioning time is considerably reduced when carried out at an elevated temperature (about 90°C.). At the beginning of this process large heat quantities are evolved from the boards which must be removed continuously by fans. Good circulation is as essential in the conditioning chambers as in the tempering chambers. 11 diagrams. E.S.

BOARD MILLS

PAPER MILL NEWS. American Box Board completes $6 million expansion program. Paper Mill News 77, no. 5: 8-10, 12, 14, 16-22 (Jan. 30, 1954).

The expansion program of the board mill at Filer City, Mich. involved a new fully integrated pulp mill, a new Black-Clawson Fourdrinier machine and auxiliary equipment, and a new Babcock and Wilcox boiler for pulverized coal. The mill produces 180 tons of corrugating medium per day by a semichemical neutral sulfite operation; aspen is used as the raw material and cooked in two continuous Chemipulp digesters. Details of the important new installations are given. The last part of the article consists of brief descriptions of individual items by the different suppliers of the equipment. 30 figures. E.S.

BOARD MILLS—DIRECTORIES

FIBRE CONTAINERS. Official board mill directory. Fibre Containers 38, no. 12: 110, 113-14, 116, 118, 120, 122-4, 126-8, 130-42 (December, 1953); *cf.* B.I.P.C. 23: 393.

Sections for regular and specialty board mills are included in this annual directory of board mills in the United States and Canada. The U. S. mills are listed by states and also in an alphabetical list of board-mill companies, the Canadian mills alphabetically. R.A.S.

BOARD SPECIALTIES

ANON. Beer and beverages. Modern Packaging 27, no. 5: 100-6, 196, 199 (January, 1954).

Current trends of packaging in the related fields of beer and beverages are discussed, including the use of carry-home containers to encourage multiple sales. The trend is nearly all-inclusive, since the carriers, mainly of paper- or fiberboard, are used extensively for both the returnable and the throw-away bottles and for cans. 21 illustrations. R.A.S.

CALCULATIONS

GUT, HERMANN. Mathematical relationships between the gram/sq. m. weight and the number of boards. Wochbl. Papierfabrik. 81, no. 19: 711-14 (Oct. 15, 1953). [In German]

Examples are given for calculating the weight of the individual board sheet and the number of sheets per 25 or 50 kg. of boards when the gram/sq. m. weight is known. The confusion in terminology existing in the merchandising of boards and the need for standardization of trade customs is emphasized. 4 tables and 2 figures. E.S.

CELLULOSE

BARTUNEK, RICHARD. Cellulose fibers and ionic, dipole, and molecular complexes—colloid science and a still neglected dimension. Kolloid-Z. 133, no. 2/3: 125-31 (November, 1953). [In German]

The interpretation of cellulose reactions requires a knowledge of the chemical affinities arising from the cellulosic molecular, macromolecular, supermolecular, and biological structure of the fiber and of the state of the reagent. In the chemistry of viscose, for instance, the rates of ripening (oxidation of the alkali cellulose) and of xanthation both depend on the presence of free water in the alkali. The swelling of cellulose in concentrated electrolytes depends on the frequency distributions of the dipole hydrates of the bases, acids, and salts involved. In alkali solutions of moderate concentration the size of the ion hydrate complex determines its penetration into the interfibrillar spaces (10 A. wide). To penetrate the paracrystalline region, complexes must be less than 10 A. and to penetrate the crystalline region, less than 8 A. Dipole hydrates of acids and salts probably catalyze the permutoid acetylation of cellulose with acetic anhydride by swelling and separating the crystalline regions. In addition to accessibility, "egressibility" (the freedom to leave the fiber system) may also be important, as in pulping wood. Overlapping the colloid range (10-1000 A.) the dimensions of the free space between particles are of increasing importance (about 3-15 A.). 7 figures and 12 references. K.W.,Jr.

CELLULOSE—DEGRADATION

GUSTAFSSON, CHARLEY, WATHÉN, CHRISTINA, and SAARNIO, JOUKO. Dissolving of carbohydrates from spruce wood in heterogeneous hydrolysis with diluted sulphuric acid. Paper and Timber (Finland) 35, no. 11: 409-10, 412 (November, 1953). [In English]

Sprucewood flour was hydrolyzed with 0.1 *N* and 1.0 *N* sulfuric acid at a temperature of 97°C., and the amount of carbohydrates dissolved after different reaction times was determined by analysis of the undissolved component of the flour. The experiments show that the rate of dissolution of glucan, mannan, and xylan rapidly decreases with increasing reaction time, and that this retardation is proportionally the same for the three carbohydrates, regardless of the time of reaction. The results are discussed and the conclusion is reached that it seems improbable that the crystallinity of the carbohydrates is the only or even the most important factor which determines the rate of solution. This indicates that it is impossible to determine the amounts of crystalline polysaccharides in wood kinetically. 4 tables and 8 references. E.S.

CELLULOSE—OXYCELLULOSE

BANDEL, WERNER. Oxidative degradation of alkali celluloses from beech sulfite pulps. Makromol. Chem. 11, no. 2/3: 87-96 (December, 1953). [In German; English summary]

Alkali celluloses prepared from beech sulfite pulp were degraded by oxidation under various conditions. Ordinary aging at 22°C. produces D.P. maxima at about 500 which are interpreted as being due to weak spots in the original cellulose molecule. Such maxima, however, are not produced at higher temperatures (even as low as 26°) or with catalysts (cobalt). Oxidation of the original cellulose in an oven at 150° shows slight maxima at 550, 750, and 900, but it also shows a great increase in low D.P. material. This is borne out by chromatography of the soluble portion. In the alkali liquors there is a gradual increase of xylose as oxidation proceeds, but in thermally degraded pulp there is an increase of glucose. The rate of oxidation can be predicted from the chain-length distribution of the pulp. A high content of low D.P. material (wood polyoses) protects the longer chains from oxidative attack and slows down the ripening of the alkali cellulose. 10 figures and 17 references. K.W.,Jr.

CELLULOSE ESTERS

SCHNEEBELI, P. The addition reaction of phenyl isocyanate with bleached ramie fibers. Assoc. tech. ind. papetière, Bull. no. 7: 223-9 (1953). [In French]

The progress of the addition reaction between phenyl isocyanate (I) in dry pyridine at 100°C. and bleached commercial ramie (II), ramie bleached in the laboratory (III), and purified cotton linters (IV) was followed chemically and microscopically (as indicated by a series of photomicrographs). Submicroscopic studies of the progressive addition of (I) to hydroxyl groups in cellulose were made by noting the changes in x-ray diffraction patterns as well as those in water-vapor sorption. The D.P.'s of (II), (III), and (IV) were, respectively, 1275, 1315, and 880. As indicated by nitrogen determinations, all three hydroyxl groups in (II) were covered by (I) within four hours and in (IV) within about 12 hours. The esterification of (III) was incomplete even after 16 hours unless (III) had received a 48-hour pretreatment with (I) in pyridine at room temperature which caused no actual addition of (I). The initial reaction of (I) with (II) or (III) took

place at the nodes (i.e., slippage planes). When all hydroxyl groups had reacted, the products were gels which still retained some structures of the original fibers. No changes in the x-ray diagrams appeared until about 28% of the hydroxyl groups had been covered. After a 38% esterification had occurred, a diffuse spot appeared at the equator of the diagram, and this became more marked as the addition progressed. In the initial phase of (I) addition in (II), (III), and especially in (IV), the water-vapor sorption actually decreases. This is accounted for by the early esterification of the easily accessible hydroxyl groups, which were originally more hydrophylic than was the (I)-addition product. After about 30-32% of the hydroxyl groups are covered by (I), the sorption rises steadily until esterification is complete, and this rise in sorption is correlated with the disruption of the crystalline lattice in (II), (III), and (IV), which gradually renders more and more of the cellulose chains available to esterification. 1 table, 5 graphs, 16 photomicrographs, and 4 references. L.E.W.

CHEMICAL TESTING—CELLULOSE

SCHRAMM, M., and HESTRIN, SCHLOMO. Synthesis of cellulose by *Acetobacter xylinum*. 1. Micromethod for the determination of celluloses. Biochem. J. 56, no. 1: 163-6 (January, 1954); *cf.* B.I.P.C. 17: 334.

A technique for the purification and quantitative recovery of small samples of bacterial cellulose is described in detail. A micromethod for the estimation of cellulose in these samples was developed; it is based on the dissolution of the purified polysaccharide by acetolytic degradation, the conversion of the product into reducing hexose by acid hydrolysis, and the colorimetric estimation of the formed sugar with the aid of a copper reagent. The applicability of the technique to bacterial celluloses and cotton cellulose has been verified. The method is relatively rapid and specific and is appropriate to serial analysis; the lower threshold is 20 μg. and the error range ±4%. 2 diagrams and 4 references. E.S.

CHEMICAL TESTING—CELLULOSE ESTERS

MALM, CARL J., TANGHE, LEO J., LAIRD, BARBARA C., and SMITH, GLENN D. Determination of total and primary hydroxyl in cellulose esters by ultraviolet absorption methods. Anal. Chem. 26, no. 1: 188-90 (January, 1954).

Different amounts of primary and secondary hydroxyl groups are formed during the hydrolysis of cellulose acetate, depending on the exact conditions of hydrolysis. As the properties of the hydrolyzed cellulose ester depend on the relative amounts of the different hydroxyls, this information is desirable for characterizing the ester. Ultraviolet absorption measurements have been used to measure quantitatively the amounts of carbanilate and trityl introduced into hydrolyzed cellulose acetate by reaction with phenyl isocyanate and trityl chloride, respectively. Measurement of the carbanilate content allows calculation of the total hydroxyl, and measurement of the trityl content allows calculation of the primary hydroxyl in the original material. These methods have been applied to a wide variety of cellulose esters, and their precisions have been evaluated using a typical sample of cellulose acetate. 3 tables, 2 diagrams, and 9 references. E.S.

CHEMICAL TESTING—PAPER—ACIDITY

CHÊNE, M., and MARTIN-BORRET, O. Acidity or alkalinity of

papers; determination of the pH of aqueous extracts. Assoc. tech. ind. papetière, Bull. no. 7: 200-2 (1953). [In French]

The direct determination of the pH of a paper sheet does not seem possible; colored indicators cannot be used in determining the pH by direct contact with the sheets. On the other hand, maceration with cold water leads to a suitable equilibrium between the paper and water, and the TAPPI Standard Method T 435 m-42 was found satisfactory for determining the pH in such extracts. The higher the amount of alum used in sizing, the lower the pH of such extracts. Sheets which were formed in neutral media gave extracts the pH of which approached 7. 5 tables and 5 footnotes. L.E.W.

CHEMICAL TESTING—PULP—BLEACHING PROPERTIES

LEEMHUIS, P. L. Establishment of correlations for the three-stage bleaching of semichemical and sulphite pulps and blends employing a modified permanganate method. Tappi 37, no. 1: 32-8 (January, 1954).

A modification of the Wiles permanganate number test (TAPPI Standard T 214 m-50) has been developed. This modification took into account the problem of the ratio of permanganate to pulp sample weight when a very wide range of permanganate numbers was considered. Bleaching investigations, based on this modified test, were carried out on a series of mixed hardwood neutral sodium sulfite semichemical pulps of widely varying cooking degrees, on some spruce sulfite pulps, and on several blends of these two types. Through the introduction of the permanganate number of the alkali-extracted pulp as a variable, the establishment of correlations for the first and the third stages of bleaching was made possible. In practical bleaching work, the use of separate correlations for the first and third stages proved advantageous, because it permitted compensation in the hypochlorite treatment for certain discrepancies encountered in the chlorination and alkaline extraction stages. A generalized graphical representation of the over-all three-stage bleach requirements for these pulps was made by combining the correlations for the first and third stages. The relationships established with these specific pulps were applied with discretion with a promising measure of success in some pulping investigations, in which conventional and unconventional pulping methods were used, and which involved a number of individual hardwood species and various commercial blends of mixed hardwoods. 5 tables, 2 diagrams, and 3 references. E.S.

CHEMICAL TESTING—PULP—COPPER NUMBER

TRIBOT, A., and GOUËR, M. Studies on the significance of the copper number; apparent and concealed degradations of cellulose chains. Assoc. tech. ind. papetière, Bull. no. 7: 214-16 (1953). [In French]

The copper number (I) could be determined satisfactorily by the Hägglund-Bertrand method, supplemented in certain cases by the Jovinet-Brady method; the results of both methods are in good agreement. Determinations of (I) were made on cotton cellulose mildly oxidized by hypochlorite solutions at varying pH; (I) ranged from 0.15 to 0.7. The solubilities of these same oxycelluloses in hot 7% sodium hydroxide and the D.P.'s were determined; all the measurements were repeated after extraction with hot alkali. A linear relationship was found to exist between (I) and the sodium hydroxide solubility. After treatment with alkali, the (I) remained constant at 0.15, irrespective of the D.P. Oxidations carried out in an acid medium showed both high sodium hydroxide solubility and high (I). For any specific (I)

of a cellulose oxidized in acid media, the drop in D.P. after alkaline treatment was less significant than when the oxidation had been carried out at about pH 7. (I) is not always proportional to the D.P., a finding which is discussed. Any changes in (I) appear to be dependent entirely on the formation of degradation products of cellulose which are soluble in sodium hydroxide. 4 figures and 3 footnotes. L.E.W.

CHEMICAL TESTING—PULP—CUPRAMMONIUM VISCOSITY

SIEBER, RUDOLF. The influence of the velocity gradient on the results of the viscosity determination of pulps. Das Papier 7, no. 23/24: 466-71 (December, 1953). [In German; English and French summaries]

In contrast to Newtonian liquids, anomalous liquids, such as cellulose in cuprammonium solutions, show no proportionality between shearing stress and flow gradient. This fact renders the comparison of viscosity values which have been determined by different values more difficult. Hence, a conversion to a standard gradient of 200 is proposed for the exact comparison of measurements in cuprammonium solution. A graph and the necessary equations are included, and their application is explained. 2 tables, 2 diagrams, and 8 references. E.S.

CHEMICAL TESTING—WOOD—MANNAN

ROUDIER, A., and EBERHARD, L. Determination of anhydromannose residues (mannans) in the wood of gymnosperms (conifers), angiosperms (broadleaf trees), and in cellulosic pulps. Assoc. tech. ind. papetière, Bull. no. 7: 217-22 (1953). [In French]

The present methods for determining mannose (I) in wood hydrolyzates are reviewed critically. When small amounts of (I) are present, as in the case of the hardwoods (II), the classical phenylhydrazine determination is unsatisfactory because slight epimerization of glucose to (I) under the influence of barium carbonate may be sufficient to invalidate the results. When (I) is to be determined in (II), or in pulps from (II), the authors eliminate the use of barium carbonate entirely, and deacidify the hydrolyzates by passing them through Deacidite or Amberlite IR4B columns, concentrating the eluates *in vacuo* and determining (I) by means of paper chromatography, rather than by the use of phenylhydrazine. No mannans were present in oat, wheat, rye, or barley straws, but small amounts (percentages given in parentheses) were found in the following hardwoods: *Carpinus betulus* (0.6; 0.87); *Quercus pedunculata* (1.07); *Populus robusta* (0.96; 1.16-1.28); *Populus tremula* (0.64; 1.0); *Ulmus campestris* (1.3; 1.27); and *Tilia cordata* (0.95; 1.38). In general the hydrolyses carried out with 5% hydrochloric acid gave rise to somewhat lower (I) values than did hydrolyses with 72% sulfuric acid. 1 table, 5 figures, and 19 references. L.E.W.

CHROMATOGRAPHY

KALKWARF, DONALD R., and FROST, ARTHUR A. Use of infrared radiation for detection of colorless substances on paper chromatograms. Anal. Chem. 26, no. 1: 191-5 (January, 1954).

Since it is desirable to have a general physical method for detecting colorless substances on paper chromatograms, an apparatus has been developed to record infrared emission and transmission properties of paper strips. A variety of substances in milligram quantities have been detected without the aid of a spectrophotometer. 9 figures and 16 references. E.S.

STRAIN, HAROLD H., SATO, T. R., and ENGELKE, JOHN. Chromatography and analogous differential migration methods. Anal. Chem. 26, no. 1: 90-100 (January, 1954); *cf.* B.I.P.C. 22: 400.

The literature on chromatography and the related, widely applicable, differential migration techniques are reviewed; the analysis covers the developments of the past two years. 12 figures and 185 references. R.A.S.

COLOR

BALL, G. J. Colour. Paper & Print 26, no. 1: 40-1, 43-4, 46; no. 2: 176, 178, 180, 182; no. 3: 314, 316, 318, 320; no. 4: 390-2 (Spring-Winter, 1953).

In the first article of the series, the author discusses the theory of color, principally the differences in color, intensity, and tone, and their dependence on individual interpretation; instrumental methods for determining color are described. The use of color in printing, given in the second article, covers the light-scattering property of paper and the application of colored inks. In the third installment, harmony in shades, tones, and hues is considered; the final article deals with the use of color in creating effects on human emotions. 23 figures and 9 references. R.A.S.

COLOR-BLINDNESS

FORSHAW, C. R. A new form of anomaloscope. J. Sci. Instr. 31, no. 1: 16-17 (January, 1954).

A new form of instrument combining features of the Rayleigh and Nagel anomaloscopes is described. Results of tests on 217 males show that normal trichromats fall within the two-standard deviation limits of a normal error distribution, and that anomalous trichromats form separate populations merging into the three-standard deviation limits. 2 figures and 3 references. E.S.

COLORIMETRY

MIDDLETON, W. E. KNOWLES. Comparison of colorimetric results from a normal-diffuse spectrophotometer with those from a 45-degree-normal colorimeter for semiglossy specimens. J. Opt. Soc. Amer. 43, no. 12: 1141-3 (December, 1953).

Whereas the illuminating and viewing conditions in the Hardy-General Electric recording spectrophotometer seem to have advantages in the measurement of textiles, they do not give results in accord with ordinary experience in the measurement of some other kinds of samples, particularly glossy and semiglossy paints. This paper is intended to document this assertion further by an analysis of recent British measurements on paint samples. 2 diagrams and 7 references. E.S.

WEBBER, A. C., and BILLMEYER, F. W., JR. Application of a color-difference index to highly selective transparent specimens. J. Opt. Soc. Amer. 43, no. 12: 1127-36 (December, 1953).

The Adams color-difference index has been applied to small color differences (mainly obtained from exposure to light) between highly selective transparent colors in acrylic resins. The results have been compared with visual estimates of the color differences. A satisfactory correlation, with some interesting exceptions, exists between the two methods. 3 tables, 10 diagrams, and 17 footnotes. E.S.

CONTAINER INDUSTRY

U. S. DEPARTMENT OF COMMERCE. *Business and Defense Services Administration. Containers and Packaging Division.* Containers & packaging review 1953-1954. Paper, Film and Foil Converter 28, no. 1: 20-2 (January, 1954).

The 1953 business conditions of plastic-film, foil, and paper-container industries in the United States are described briefly by type of container—grocery and specialty bags, plastic films, aluminum foil, shipping sacks, and sanitary food containers—and by geographic location. 1 diagram. R.A.S.

CONTINUOUS COOKING PROCESS

PRAETORIUS, —. The continuous Muskau cooking process. Wochbl. Papierfabrik. 81, no. 18: 675-7 (Sept. 30, 1953). [In German] *cf.* B.I.P.C. 24: 186.

With reference to previous publications on the subject, the author reviews the possibilities of the method which is suitable for wood and annual plants; although the original installation (now dismantled and transferred to the East) operated with alkaline media, the equipment could readily be adapted to acid methods, provided suitable constructional materials were employed. The Muskau plant produced pulp for leatherboard from low-grade pine (not suitable for any other purpose) in yields of 82-94%; experimental data on results with wheat straw and reeds are included which indicate that high-yield pulps for paper manufacture might be produced. The purpose of the present article is the intention to arouse renewed interest in the method and its further development. 2 tables. E.S.

DE-INKING

BAILEY, H. P., FORSYTHE, J. J., and ANDREWS, E. F. Some factors in the color reversion of bleached secondary fiber. Tappi 37, no. 1: 14-18 (January, 1954).

Secondary fiber obtained by deinking of waste paper tends to revert in color after bleaching. A number of factors involved in deinking and bleaching waste magazine stock were studied in the laboratory to determine their effect on color reversion. Experiments with three different deinking agents showed that in general there was the least color reversion with peroxide, and the most with sodium hydroxide; sodium carbonate was intermediate. Up to deinking temperatures of 160°F., an increase in temperature resulted in less color reversion; a further raise in temperature above 160° brought about slightly greater reversion. In the bleaching operation, experiments were made in varying total chlorine, chlorine in chlorination stage, and the hypochlorite. Increase of total chlorine and of the final brightness of the bleached stock gave less color reversion. Buffered bleaching or high alkalinity in the hypochlorite stage gave higher brightnesses and less color reversion. It was found, under the experimental conditions observed, that hypochlorite bleaching at 110° produced the highest brightness with greatest color reversion; that 140° gave the lowest brightness with least color reversion, and that 80° showed intermediate results. The use of a 1% caustic extraction stage decreased the loss of color. No further benefit was found in the use of over 1% caustic. Where peroxide was employed as an additional stage for final brightening, less color reversion was experienced. 9 tables. E.S.

JELKS, J. W. Deinking by the froth flotation process. Tappi 37, no. 1: 149-50A (January, 1954); *cf.* B.I.P.C. 22: 904.

The application of froth flotation to deinking is discussed. 3 figures. E.S.

DETECTORS (ELECTRONIC)

REID, M. J. Electronic label inspection. Modern Packaging 27, no. 5: 98-9, 205-6 (January, 1954).

Assurance of the correct label on a can of packaged chemicals for Eastman Kodak Co. is provided by a can-label detector made up of seven horizontal wires forming a fence along the conveyor line, against which the cans are rolled. A lithographed code strip incorporated in the label exposes bare metal gaps which come into contact with the wires; the wires can be connected in 21 different combinations, each of which will pass only a given coded can. A photoelectric beam speeds the operation of the reject gate. 4 illustrations. R.A.S.

DRYING

GLUCKERT, F. A. Drying. Ind. Eng. Chem. 46, no. 1: 82-6 (January, 1954); *cf.* B.I.P.C. 23: 403.

This general review of the literature published during the past year on drying includes sections on drying fundamentals, drying methods, and the drying of specific materials (including cellulosic materials). 149 references. R.A.S.

DRYING—PAPER

MONTGOMERY, A. E. Variation of drying rates of individual driers through the drier section. Tappi 37, no. 1: 1-13 (January, 1954).

This is a report on TAPPI-financed Project 66 (TAPPI Research Grant no. 21) which, for the first time, provides reliable information on the variation of drying rates through the drier section of paper and board machines under varied conditions, and permits an intelligent determination of the moisture content of the sheet at any point in a proposed machine, and the actual quantitative distribution of evaporation along any drier section. The results of the field tests are presented in graphical form. These tests disclose that on many machines a much greater proportion of the driers than is commonly supposed is used for removal of the last final percentages of moisture. As shown in some of these tests, even a slight increase in the final moisture content would provide a substantial increase in drying capacity. It must not be concluded, however, that final moisture content is, next to steam pressure, the greatest factor in determining over-all drying rate. The evaporative drying rate has been plotted against steam pressure or temperature, and it was found that extremely wide variations still exist at any given steam pressure. The fact remains, therefore, that those factors which affect the effectiveness of heat transfer contact between the drier sheet and the paper are normally the dominant factors in determining drying rate at a given steam pressure. 2 tables and 26 diagrams. E.S.

ENZYMES

BARKER, S. A., BEBBINGTON, A., and BOURNE, E. J. The mode of action of the Q-enzyme of *Polytomella coeca*. J. Chem. Soc.: 4051-7 (December, 1953).

The rate of conversion of potato amylose into amylopectin by the Q-enzyme of *Polytomella coeca* is increased markedly when maltosaccharides of short

average chain-length are introduced. Other saccharides, devoid of α-1,4-glucosidic linkages, do not have this effect. The maltosaccharides probably serve as receptors of dextrin chains transferred by the enzyme, a view which derives support from the fact that, in the presence of C^{14}-maltose, the protozoal enzyme converts amylose into a polysaccharide which displays C^{14}-activity. 11 tables and 2 diagrams. E.S.

MARSH, P. B., BOLLENBACHER, K., BUTLER, M. L., and GUTHRIE, L. R. "*S* factor," a microbial enzyme which increases the swelling of cotton in alkali. Textile Research J. 23, no. 12: 878-88 (December, 1953).

The exposure of cotton fiber to cell-free filtrates obtained from certain culture media after the growth of micro-organisms increases the degree of subsequent swelling of the fiber in sodium hydroxide solutions. The active agency in the filtrates is here termed "*S* factor" (I). Its action is measured by a previously described alkali-centrifuge test (*cf.* B.I.P.C. 24: 266). With the fungus *Myrothecium verrucaria,* (I) was produced during growth in media which included any of several cellulose-containing materials but not in any of several media lacking in cellulose. This finding and related results suggest that (I) consists at least in part of an enzyme or enzymes of the cellulase complex. A simple and reliable method of preparing *Myrothecium* filtrates of uniform and high *S* activity is reported. Several properties of (I) in *Myrothecium* filtrates have been observed. It is operative over a wide pH range. A very considerable uptake of (I) from solution by cotton fiber and a major increase in alkali-centrifuge value of the fiber occur in 10 minutes. Strength losses take place much more slowly. (I) is moderately stable in sterile filtrates at room temperature. Filtrates may be stored in frozen condition or may be dried at 40°C. and stored dry with little loss in activity. The active factor is precipitated by acetone and is inactivated by crystalline pepsin. Although partial inactivation of (I) by heat occurred in 30 minutes at temperatures of 60° and higher, complete inactivation did not take place even at much higher temperatures, and easily measurable activity remained even after heating at 100° for 30 minutes. Autoclaving at 15 pounds steam pressure for 15 minutes caused complete inactivation. The same filtrates also exhibited resistance to complete cellulase inactivation by heat when tested by a carboxymethylcellulose-viscosity test for cellulase. 8 tables, 4 diagrams, and 23 references. E.S.

EUCALYPTUS

L. B. Eucalyptus. Wochbl. Papierfabrik. 81, no. 22: 824-5 (Nov. 30, 1953). [In German]

The cultivation of eucalypts in Central and South Brazil is described. Of the over 100 existing species of *Eucalyptus,* the following four are particularly recommended: *E. rostrata* and *E. saligna* for deep heavy soils, and *E. tereticornis* and *E. botryoides* for light sandy soils. The wood is suitable for lumber, pulp, carpentry, and furniture. E.S.

EVAPORATION AND EVAPORATORS

BADGER, W. L., and LINDSAY, R. A. Evaporation. Ind. Eng. Chem. 46, no. 1: 87-90 (January, 1954); *cf.* B.I.P.C. 23: 403.

This review of the literature of the past year on the theory and practice of evaporation shows an increased use of the Rosenblad evaporator in the paper industry. Sections on operations, scale and corrosion, laboratory types, and types of equipment are included. 64 references. R.A.S.

FOULON, A. Evaporator plants. Wochbl. Papierfabrik. 81, no. 22: 825-6 (Nov. 30, 1953). [In German]

Evaporators are large consumers of heat. In modern installations large amounts of heat can be saved by the stepwise utilization of steam, compression of vapors, and use of preheaters. Examples are given. The application of a vacuum does not result in savings; however, it is essential where low-pressure steam is re-employed. Modern evaporators are usually constructed with vertical pipes which give the best results when the correct dimensions for the product and the existing operating conditions are selected. Continuous processes are preferable to batch operation. E.S.

REID, D. M. Direct contact evaporators. Proc. Tech. Sect., Can. Pulp Paper Assoc. 39: 134-5; discussion: 135 (1953).

The modern recovery furnace is normally equipped with a direct contact evaporator as the first unit of auxiliary equipment for the recovery of waste heat and chemical fume from the furnace flue gases. Two commercially acceptable units for this purpose are the B. & W. cyclone scrubber and the D. J. Murray cascade evaporator; the construction and mode of operation of the two units are described. E.S.

FEED WATER

DALE, W. A. Feed water treatment problems at the Woodfibre, B. C. mill of Alaska Pine & Cellulose Ltd. Pulp Paper Mag. Can. 54, no. 13: 121-2, 125 (December, 1953).

The raw water of the steam plant is supplied by Cedar Creek and is characterized by very low dissolved-solids and silica content. The installation of new high-pressure boilers made the provision of a suitable feed and boiler water imperative. Problems in water treatment and their solutions are outlined. 3 tables and 4 references. E.S.

FIBER—STRUCTURE

FREY-WYSSLING, A. The fine structure of cellulose microfibrils. Science 119, no. 3081: 80-2 (Jan. 15, 1954).

The author visualizes cellulose as built up of microfibrils 150-250 A. in diameter which consist of elementary fibrils (or micellar strands 30 A. × 70-90 A.) embedded in a cortex of paracrystalline cellulose (cellulose of a low degree of order). He shows how this concept agrees with data obtained by x-ray diffraction, electron microscopy, and density measurements. In the primary wall the microfibrils are individualized and form an interwoven structure. In the secondary wall they are parallelized and aggregate to coarser bands. 1 table, 2 figures, and 15 references. K.W.,Jr.

VOGEL, ALFRED. Fine structure of ramie. Makromol. Chem. 11, no. 2/3: 111-30 (December, 1953). [In German; English summary]

Purified ramie fibers mechanically disintegrated by a Waring blendor or an Ultra-Turrax homogenizer form fiber suspensions which were prepared for electron microscopy by the double shadowing technique of Kahler and Lloyd (*cf.* J. Appl. Phys. 21: 699-707 [1950]). The microfibrils have an average width of 173-203 A. and a thickness of 30 A. The flat side is parallel to the supporting membrane. Hydrolysis in 2.5 *N* sulfuric acid produces hydrolyzed particles. These are formed by irregular transverse splitting of the microfibrils, usually at an angle. The ends may be steplike or oblique.

Longitudinal lines and cracks indicate that these particles are built up of smaller units 80-100 A. wide and 300-1000 A. long. These probably correspond to the crystalline areas in the original fiber. 1 table, 13 figures (including 9 electron micrographs), and 40 references. K.W.,Jr.

FILTRATION

MILLER, S. A. Filtration. Ind. Eng. Chem. 46, no. 1: 100-5 (January, 1954); *cf.* B.I.P.C. 23: 406.

The author discusses progress made in the past year in the field of filtration; sections are included on reviews; theory, experimental data, and design methods; equipment and its operation; process applications (including filtration of viscose and water, sewage, and industrial wastes); filter mediums and filter aids; and laboratory apparatus and methods. 1 table (covering patents relevant to filtration) and 154 references. R.A.S.

FLAX

GILLING, D. R., and SAMUELS, D. E. J. The structure of flax fibre strands. J. Textile Inst. 44, no. 12: T609-18 (December, 1953).

Investigations are described which demonstrate the presence of a succession of longitudinal fissures in strands of hackled retted flax fiber, attributable to a disruption of the binding materials between the ultimate fibers. When a tuft of fiber strands is cut into short segments, many of the strands break up into several smaller pieces, and the system of fissuring is characterized by the number-length curve. The experimental method of obtaining such a curve is described and the problem of sampling in order to obtain a representative curve is discussed. An equation is deduced from theoretical considerations, which expresses the results within the limits of experimental error. Curves have been fitted to the experimental results from four flaxes of widely different origin. Possible applications of the investigation are discussed. 3 tables, 4 figures, and 3 references. E.S.

FLUID DYNAMICS

WEINTRAUB, MURRAY. Fluid dynamics. Ind. Eng. Chem. 46, no. 1: 112-17 (January, 1954); *cf.* B.I.P.C. 23: 406.

Single-phase flow, flow through porous media, multiphase flow, pumps and pump design, and viscosity are considered in this review of the literature of the past year on fluid dynamics. 1 illustration and 206 references. R.A.S.

FORESTS AND FORESTRY

CHAPMAN, H. H., and HARRISON, HUBERT M. The land ownership issue in East Texas. Am. Forests 60, no. 1: 22-3, 40, 42, 44-6, 48-50 (January, 1954).

The public lands resolutions of the East Texas Chamber of Commerce are presented and the issue is discussed pro and con. The first author sees the resolutions as the outcome of self-interested paper manufacturers who as a result of the shortage of pulpwood wish to use pine which could be sold as sawtimber for three times the price of pulpwood. The second author presents the point of view of the East Texas Chamber that private interests are at the present time just as concerned about conservation and that the federal-government control is no longer necessary for the public interest. R.A.S.

FISCHER-ZACH, HANS. Pulpwood preparation in the forest and the purchase and transport of pulpwood in the United States. Das Papier 7, no. 23/24: 493-7 (December, 1953). [In German]

The author records his impressions during a trip as a member of the German productivity team of the pulp, paper, and board industries in April-May, 1952 to New England, the Lake States, and the South. 1 table, 10 figures, and 1 map. E.S.

MALSBERGER, H. J. Fifteen years of forestry progress by the Southern Pulp and Paper Industry. Southern Pulp Paper Mfr. 17, no. 1: 64, 66, 68 (January, 1954).

Progress in forestry practices made by the pulp and paper industry in the South is discussed, including growth of trees for profit, ownership of forest lands, provisions for perpetual supply, education in forest management, and the formation of the Southern Pulpwood Conservation Association; important phases of its program are services to landowners and field demonstrations. R.A.S.

GLYCOL

DIEFENBACH, WILLIAM T. Calculating glycol hygroscopicity. Am. Ink Maker 32, no. 1: 27-9, 31, 67 (January, 1954).

A method is given for calculating the amount of water absorbed by glycols to arrive at glycol-water system equilibrium at common atmospheric temperatures and R.H.'s. This is accomplished by the development and use of fundamental-key hygroscopicity curves unique to each glycol. 1 table, 5 diagrams, and 2 references. E.S.

GROUNDWOOD MILLS

SHIRLEY, ROBERT. Arizona's first pulp mill. Paper Trade J. 138, no. 2: 14-15 (Jan. 8, 1954).

A brief description is given of the new groundwood mill at Flagstaff, Ariz., which is being erected by the Coconino Pulp and Paper Co. The raw material will be thinnings of pine, spruce, and aspen from the Coconino National Forest. The initial capacity of the mill will be 25 tons of wet laps/day which will be shipped to paper mills in the southwest area, mostly on the West Coast. The first production is scheduled for early in 1954. 5 illustrations. E.S.

GROUNDWOOD PULP

BRECHT, WALTER, and KLEMM, KARLHEINZ. The mixture of structures in a mechanical pulp as a key to the knowledge of its technological properties. Pulp Paper Mag. Can. 54, no. 1: 72-80 (January, 1953); Proc. Tech. Sect., Can. Pulp Paper Assoc. 39: 272-80 (1953); *cf.* B.I.P.C. 22: 908-9.

This is a complete translation of the German original. 1 table, 12 figures, and 10 references. E.S.

MACK, HEINZ, and FRANKE, CLAUS-EBERHARD. The separation of the mucilage from the flour in the fine fraction of groundwood pulp. Wochbl. Papierfabrik. 81, no. 21: 786-7 (Nov. 15, 1953). [In German]

The fine fraction of groundwood pulp contains mucilage (I) and flour (II); (I) consists of fibrous mucilage and more or less swollen fibrils, whereas (II) is composed of small sometimes powdery particles of fiber debris. A centrifuge (same type as used for medical purposes) can be used for separating (I) from (II). The individual glass containers are filled with an aqueous suspension of the mixture (consistency about 1.5%/liter) to which 0.2 ml. of PRIL-liquid (trade name of a product manufactured by Böhme Fettchemie, Düsseldorf, nature not disclosed) is added. After centrifuging for 30 seconds, 4 ml. of the supernatant water in the containers [containing (I)] are withdrawn. The glasses are refilled with distilled water, and centrifuging and withdrawal are continued until the supernatant water layer is no longer turbid. 3 photomicrographs and 4 references. E.S.

GUMS AND RESINS

ANDREWS, P., BALL, D. H., and JONES, J. K. N. The isolation of oligosaccharides from gums and mucilages. Part I. J. Chem. Soc.: 4090-5 (December, 1953).

Graded hydrolysis of peach gum and cherry gum yields a mixture of mono- and oligosaccharides from which 3-O-β-L-arabopyranosyl-L-arabinose has been isolated and characterized. The mixture of sugars obtained on graded hydrolysis of peach gum and cholla gum contains (4 or)5-O-β-D-xylopyranosyl-L-arabinose. E.S.

THOMMEN, E. K. Changes in sprucewood resin during seasoning. Svensk Papperstidn. 56, no. 24: 937-40 (Dec. 31, 1953). [In German; English and Swedish summaries]

The Soxhlet extraction of wood resin yields variable results. One of the reasons for this occurrence may be that the amount of extracted resin depends to a large extent on the degree of comminution to which the wood is subjected by either chipping or grinding. In addition, resin extracts obtained from the same wood in freshly cut or seasoned condition cannot be compared for the following reasons: (1) During storage, the wood structure shrinks irregularly whereby numerous minute cracks are produced which incease the inner surface and, hence, the effective degree of comminution. In the author's experiments freshly cut wood yielded less resin throughout than the same wood after storage. (2) The usually inaccessible resin, obtained after fine comminution, shows a different chemical composition than the regular Soxhlet extract. Resin, on storage, loses its viscous character and becomes hard and finally brittle; this has been assumed to be a consequence of oxidation processes. Analyses of pure resin extracts exposed to air showed no oxygen absorption during prolonged storage periods. The hardening of resin therefore can not be ascribed to oxidation processes. 3 tables, 2 figures, and 8 references. E.S.

HARD WOODS

McGOVERN, J. N. Pulp and paper: tools for hardwood utilization. J. Forest Products Research Soc. 3, no. 5: 61-7; discussion: 67 (December, 1953).

Hardwoods are a detriment to the growth of more desirable softwoods in important forested areas. Yet they represent one of the last frontiers of wood supplies for several of the forest products industries, especially the pulp and paper industry. The processes of this industry may be considered tools for utilizing these unwanted hardwoods. All of the conventional pulping methods and the newer semichemical methods can be used with hardwoods, although

some are better than others. The semichemical processes, including the recently developed cold soda process; the coarse fiber processes for making felt and wallboard stocks; the sulfate process, including its refinement of prehydrolysis; and the groundwood process with its variation in the chemi-groundwood process, are described as being especially suitable for hardwoods. Examples of the successful application of these methods in research at the Forest Products Laboratory are given. The possibilities of the sulfite and soda processes are also discussed. 5 tables, 2 diagrams, and 4 references. E.S.

HEMP

HAARER, A. E. The true hemp (*Cannabis sativa*). Paper Making and Paper Selling 72, no. 3: 6-8 (Autumn, 1953).

The author discusses the original uses of hemp, which was replaced in most cases by the cheaper fibers of jute, abaca, and sisal, and the necessary restrictions in its cultivation imposed because of its narcotic properties. Advantages in retting, yield, cultivation, and harvesting are pointed out. 1 illustration. R.A.S.

HISTORY

CLAPPERTON, R. H. The invention and development of the endless wire, or Fourdrinier, paper machine. Paper Maker [U. S.] 23, no. 1: 1-17 (February, 1954).

Individuals and inventions which are a part of the development of a continuous process for making paper are discussed, including Nicholas-Louis Robert, the inventor, and Léger Didot in France; Henry and Sealy Fourdrinier and Bryan Donkin in England; Thomas Gilpin in the United States; Thomas Bonsor Crompton, responsible for the train of drying cylinders; John and Christopher Phipps, dandy roll; George Dickinson, suction couch roll; William Joynson, water-marks in dandy rolls; Richard Ibotson, screen plate; Matthew Towgood, tub-sizing arrangements; John Dickinson, inward-flow revolving-drum screen; James Brown, suction box; Thomas Sweetapple, forming board; Charles Edward Amos, paper cutter and consistency regulator; Charles Cowan, fixed deckle; and Thomas Donkin, wire-guide mechanism. A reprint of the prospectus of the paper machine for making wove paper by the Fourdriniers is included. 2 tables and 21 figures. R.A.S.

DONNELLY, FLORENCE. Saratoga Paper Mill. Paper Maker [U. S.] 23, no. 1: 29-39 (February, 1954).

The author traces the history of the Saratoga Paper Mill, founded in California in 1869 by Erwin and William King; the mill utilized straw as raw material. Newspaper articles and documents are cited in following the development of the mill; it was wiped out by fire in 1883. 8 illustrations. R.A.S.

GAUT, M. Letter paper. Papetier 7, no. 11: 55, 57, 59 (November, 1953). [In French]

The author presents historical and philosophical excerpts on the art of written communications since the earliest beginnings, papermaking, letter paper, envelopes, postal service, and stamps, with particular reference to French conditions. 2 illustrations. E.S.

LONGUET, JEAN-DENIS. Ferdinand Revoul, barber, shoemaker, and dealer in silkworm eggs invents a perforated box and endows

his native city Valréas with a national industry. Rev. papiers et cartons 16, no. 22: 11-12 (Nov. 15, 1953). [In French]

The need for suitable boxes for silkworm eggs was presented to Revoul at a time when no domestic French boxboard industry existed; the price of imported German boxes would have been prohibitive. Revoul developed a perforated box (because the silkworms required ventilation) which he first made and perforated by hand; he also invented a machine for applying the perforations. He soon found himself making more and more boxes, not only for the French sericulture, but also for drugstores, jewellers, and candy stores. When he died in 1864, he owned several factories in France making 50,000 boxes per day. He is considered the founder of the French boxmaking industry. 2 illustrations. E.S.

VAULTIER, ROGER. The history of letter paper. Papetier 7, no. 11: 47, 50, 52 (November, 1953). [In French]

The author describes the materials upon which French letters were written. For many centuries, animal parchment was used, until gradually paper started to replace it. Examples of the different fashions in letter paper are given. 4 illustrations. E.S.

HUMOR

ANON. Art and science of papermaking. Southern Pulp Paper Mfr. 17, no. 1: 44, 46 (January, 1954).

Four cartoons showing the science of papermaking in "the good old days" are reproduced. 4 illustrations. R.A.S.

ILLUMINATION

GUTHRIE, J. C., and OLIVER, P. H. Observations on some commercial colour-matching lamps. J. Soc. Dyers Colourists 69, no. 11: 430-5 (November, 1953).

Four commercial color-matching lamps (Mazda, General Electric lamp MCF/U, Siemens, and Atlas) of the fluorescent-tube type have been considered in this study. Differences were found to exist between the lamps and Illuminant C, and also lesser differences between the lamps themselves. Samples vary in hue from lamp to lamp, but no serious discrepancies have been found in color matching; a match under one lamp is usually a match under one of the others, since in a large number of cases the dyeing has been found to have a similar spectral curve to the pattern. However, daylight is exceedingly variable, and it is doubtful whether a single standard color-matching lamp would be advisable. 4 tables, 9 diagrams, and 26 references. E.S.

SCHWEISHEIMER, W. Lighting in the paper industry. Can. Pulp Paper Ind. 6, no. 12: 22, 54 (December, 1953); *cf.* B.I.P.C. 20: 564.

The author discusses the advantages of good industrial illumination, minimum standards for different tasks, elimination of direct and reflected glare and eyestrain, and the influence of color on illumination. E.S.

INK

GREAT BRITAIN. *Department of Scientific and Industrial Research.* Ruling inks and dyes. Brit. Printer 66, no. 394: 33-5 (January-February, 1954).

The report covers investigations made at the U. S. Government Printing Office on the various ruling inks, including fading characteristics, suitability for ruling, advantages of acid dyes, dyes for nonpermanent work, the iron gallotannate ink formula, testing for permanency, resistance to water, use of preservatives, and accuracy in measurement. 4 tables. R.A.S.

INSTRUMENTATION

LAURILA, ERKKI. Instrumentation in the paper and pulp industry. Paper and Timber (Finland) 35, no. 12: 471-4 (December, 1953). [In Finnish; English summary]

The possibilities of modern instrumentation and automatic remote control from a central point as applied to pulp and paper mills are discussed. 6 illustrations. E.S.

INTERIOR PACKING

LIEBERG, E. O. Wood fiber felts for protective packaging. J. Forest Products Research Soc. 3, no. 5: 99-102; discussion: 102 (December, 1953).

The basic requirements of protective cushioning materials are outlined with a description of a felt-type material manufactured from refined wood fibers and various binders. Basic data relating to the compression properties, resiliency, abrasion characteristics, staining characteristics, moisture absorption, and thermal conductivity are given for the wood-fiber felts as a means of showing the adaptability of these materials to protective cushioning. 7 figures. E.S.

INVENTORIES

ALDERSON, A. J. Paper and the printer; stock recording. Paper & Print 26, no. 4: 374, 376, 378 (Winter, 1953); *cf.* B.I.P.C. 24: 217.

Proper methods of stock recording for efficient checking and costing purposes are outlined; an individual number for each distinct item, related varieties with related numbers, accurate recording, and complete, careful, and frequent stocktaking are regarded as necessities. 1 record form. R.A.S.

ION EXCHANGE

KUNIN, ROBERT, and MCGARVEY, FRANCIS X. Ion exchange. Anal. Chem. 26, no. 1: 104-9 (January, 1954); *cf.* B.I.P.C. 22: 406.

A survey of the literature on ion exchange published during the past two years is presented. 314 references. R.A.S.

KUNIN, ROBERT, and MCGARVEY, F. X. Ion exchange. Ind. Eng. Chem. 46, no. 1: 118-25 (January, 1954); *cf.* B.I.P.C. 23: 411.

A summary of the industrial applications of ion exchange shows an increase in the number of publications on this topic. Sections included are reviews, theory, membranes, water softening, deionization, biochemical separations, recovery, purification, preparation, analysis, waste treatment, catalysis, ion-exchange resin synthesis, medical applications, and apparatus, processes, and test procedures. 549 references. R.A.S.

LIGNIN

BRAUNS, F. E. The XIIIth International Congress of Pure and Applied Chemistry. Tappi 37, no. 1: 139-41A (January, 1954).

A review of the papers on lignin presented at Stockholm during the Congress is given. E.S.

BRAUNS, F. E. Unsolved problems of lignin chemistry. Das Papier 7, no. 23/24: 446-52 (December, 1953). [In German; English and French summaries]

Since the isolation of the total amount of lignin in unchanged condition from the plant material has hitherto not proved possible, an accurate definition of lignin cannot be given at present; neither has the bonding of lignin in the plant been definitely established. The author reviews recent pertinent investigations on these problems and discusses experiments with colloidal wood with the object of isolating the native lignin, the demethylation of lignin, the system of linkages of the lignin-building units, and the sulfonation of lignin. In conclusion, an analytical method for the determination of the barium salts of lignosulfonates is suggested, according to which the salts are separated from the lignosulfonic acid by cation exchange (Amberlite IR 120) and the barium and sulfur determined separately. 6 figures and 16 references. E.S.

TRAYNARD, PH. A study of lignin. Papier, carton et cellulose 2, no. 5: 69-70, 73-6 (November-December, 1953). [In French]

A brief review of recent lignin researches and theories is presented, including the existence and distribution of lignin in wood, chemical combination and methods of extraction, and biosynthesis. 1 table, 4 figures, and 31 references. E.S.

LIGNIN—CHROMATOGRAPHY

BLAND, DAVID E., and GATLEY, FREDA M. Fractionation of lignin by chromatography. Nature 173, no. 4392: 32-3 (Jan. 2, 1954).

Paper chromatography of lignin, isolated from *Eucalyptus regnans* with methanol at 150°C., with methanol:isopropyl ether:water (40:80:20) and with acetone:methyl ethyl ketone:water (25:75:100) indicated that this lignin contains two main lignin fractions and some impurities. The fractions were extracted from the paper chromatogram, and the ultraviolet absorption spectra of these extracts determined. 1 figure and 4 references. F.E.B.

LIGNIN—RADIOACTIVE EXPERIMENTS

STUMPF, WALTER, WEYGAND, FRIEDRICH, and GROSSKINSKY, OTTO-ALFRED. The synthesis of C^{14}-labeled dioxane and its use for the extraction of soluble lignin. Chem. Ber. 86, no. 11: 1391-401 (December, 1953). [In German]

Radioactive dioxane was synthesized and used for the extraction of lignin from spruce by the method of Stumpf and Freudenberg (*cf.* B.I.P.C. 21: 701). The lignin isolated in this way was found to be practically free of radioactive carbon, which indicates that dioxane does not condense with lignin by this method. 1 table, 3 figures, and 5 footnotes. F.E.B.

MACHINERY

ANON. Suppliers to the paper trade. Paper-Maker (London)

126, Annual Review no.: 16, 18-20, 22, 25-6, 28, 30, 32, 34, 36, 38, 40, 44, 46, 48, 52, 54-6, 58, 61-7 (1953); *cf.* B.I.P.C. 23: 412.

Developments and improvements in machinery and materials carried out during the past year by individual British firms which supply the papermaking industry are reviewed. 1 table and 46 illustrations. R.A.S.

DOMINION ENGINEERING WORKS LIMITED, *Montreal, Que.* Paper Division. Dominion Eng. 20, no. 5: 2-15 (1953).

An illustrated account of Dominion papermaking machinery is presented, including entire Fourdrinier machines and individual sections, such as slices and stock inlets, suction rolls and press sections, drier sections, calenders, reels, and winders; drives, continuous grinders, electric steam generators, and board machinery are also listed. Numerous illustrations. E.S.

MACHINERY—BEARINGS

A. M. Lead-bronze bearings in the paper industry. Wochbl. Papierfabrik. 81, no. 19: 716 (Oct. 15, 1953). [In German]

The use of lead-bronze alloys for friction bearings exposed to high temperatures is recommended. 2 figures. E.S.

MACHINERY—CONVERTING MACHINERY

ANON. Three Renger machines for the manufacture of paper cores. Papier, carton et cellulose 2, no. 5: 89-90 (November-December, 1953). [In French]

A tube or paper-core machine and two cutters (for thick- and thin-walled tubes) made by Usines Renger, Paris, France are described. 4 figures. E.S.

MACHINERY—CONVEYORS

ANON. 2½ Mile belt conveys wood chips. Paper Mill News 77, no. 4: 70 (Jan. 23, 1954); *cf.* B.I.P.C. 24: 229-30.

A single belt conveyor, 2.5 miles long, transports wood chips and other materials under a major highway and over tracks of three railroads at the new Everett, Wash. sulfate mill of Weyerhaeuser Timber Co. 4 illustrations. R.A.S.

WHITEHEAD, F. D. Handling pulpwood with a belt conveyor. Paper Mill News 77, no. 4: 58 (Jan. 23, 1954).

The installation of a 36-inch belt conveyor for handling pulpwood at the Covington, Va. mill of West Virginia Pulp & Paper Co. and mechanical and operational difficulties encountered are discussed. R.A.S.

MACHINERY—ELECTRIC EQUIPMENT

GENERAL ELECTRIC REVIEW. Research and engineering progress, 1953. Gen. Elec. Rev. 57, no. 1: 8-59 (January, 1954).

The highlights in electrical developments during 1953 are presented in a profusely illustrated review. Under "Manufacturing industries," p. 34-5, a brief reference is made to electronic-amplidyne speed control in the paper and lumber industries and to the first motor ever applied as a direct drive to a Yankee main drier. Numerous illustrations. E.S.

MACHINERY—FELTS

CHANNER, BERT L. Cylinder felts for mills in the Syracuse area. Tappi 37, no. 1: 126-8A (January, 1954).

The author discusses felts for multi- and single-cylinder machines, including weaves, felt classification, types of felts (bottom, top, and press felts), tissue felts, and the use of synthetics in felt manufacture. E.S.

STANDISH, JOHN. Why is wool best for paper machine felts? Paper Trade J. 138, no. 3: 21-2 (Jan. 15, 1954).

The author discusses the advantages of the wool fiber for wet felts, the grades of wool used for this purpose, proper blending of correct wools, wool procurement from many different sources, and the possibilities of synthetic fibers. E.S.

MACHINERY—GRINDERS

MEYER GOVERNOR COMPANY, *Minneapolis, Minn.* New system of pocket grinder control. Paper Trade J. 138, no. 3: 24-5 (Jan. 15, 1954).

A new system of modified Valvair hydraulic valves to provide simple and rapid backing-off and moving-up to the wood on pressures available in existing grinder installations and on any desired low pressure in new installations is described. The new system also allows the automatic shift from moving-up pressure to controlled grinding pressure to be changed in a few seconds by a single spring adjustment. Completely automatic pocket operation can be supplied; however, manual operation is faster. The functioning of the system is outlined briefly. 2 figures. E.S.

MACHINERY—KNIVES

COLEMAN, AL. How to get more and better production from paper knives. Paper Trade J. 138, no. 1: 23-4 (Jan. 1, 1954); *cf.* B.I.P.C. 24: 369.

Information on the honing, grinding, and selection of paper cutting knives, similar to that in the previous reference, is given. 1 illustration. R.A.S.

MACHINERY—MIXING APPARATUS

RUSHTON, J. HENRY. Mixing. Ind. Eng. Chem. 46, no. 1: 133-7 (January, 1954); *cf.* B.I.P.C. 23: 416.

Reference is made to literature on mixing published in 1953 which dealt with general reviews, mass transfer and turbulence, gas-liquid operations, viscous liquids, heat transfer, continuous flow systems, and specific applications. 1 illustration and 48 references. R.A.S.

MACHINERY—PAPER MACHINE

ANON. Small scale papermaking machine with gas-fired drier. Paper-Maker (London) 126, Annual Review no.: 68-9 (1953).

Reference is made to a small vacuum-forming paper machine of a novel type, originally developed to manufacture a specialty paper; the machine produces 140 pounds/hour of a paper 21 inches wide. The entire machine is constructed in a girder frame measuring 14 feet × 5 feet, with small additional space for the winder and drive; the drying cylinder is heated by gas

jets. The possibilities of the unit, particularly in view of its low space requirements and suitability for short runs, are stressed. 3 figures. E.S.

MACHINERY—PAPER MACHINE—EXPERIMENTAL

COLE, EDWIN J. Design for a small paper machine for teaching and research. Paper-Maker (London) 126, no. 5: 357-9 (November, 1953).

The author stresses the need for a small paper machine for educational and research purposes in Great Britain which could be installed at either the Research Association of the industry or one of the higher educational institutions where papermaking is taught. He outlines the details of a suitable teaching unit which could be constructed for a limited cost. 3 diagrams. E.S.

MACHINERY—PIPING

HAAR, FR. Mathematical and graphic determination of the cross sections of pipe conduits and flowboxes depending upon production. Wochbl. Papierfabrik. 81, no. 21: 783-5 (Nov. 15, 1953). [In German]

The fibrous suspensions for pulp and paper manufacture must possess a definite speed during flow through pipings and flowboxes; if the speeds are too low, the pulps are likely to settle or flocculate, and if they are too high, irregular speed distribution across the diameter and demixing will result. When different furnishes are used, the dimensions of the equipment must be so calculated that, at maximum output, the highest permissible flow speeds are not exceeded. Formulas for calculating the correct dimensions are given; in addition, diagrams are also presented and their application is explained. The calculations require many individual values, whereas the graphs present a comprehensive picture at a glance and are claimed to give results more readily. 2 diagrams. E.S.

MACHINERY—PUMPS

EDWARDS, T. W. How to cut impeller wear. Paper Trade J. 138, no. 3: 14-15 (Jan. 15, 1954).

Lime, mud, and slurry centrifugal pumps, when operated at capacities lower than those for which they were originally designed, tend to fail prematurely on account of accelerated impeller and casing wear resulting from internal recirculation. A by-pass arrangement and its operation are described and illustrated, which will eliminate the excessive wear on these pumps. 6 figures and 1 reference. E.S.

MACHINERY—REFINERS

BAUMBACH, FRIEDRICH. A new refiner for the halfstuff industry. Das Papier 7, no. 23/24: 489-90 (December, 1953). [In German]

A double-disk refiner of German construction operating with the aid of dilution water and heating steam is described. 3 figures. E.S.

MACHINERY—SUCTION BOXES

BARTON, E. A. Water removal on the Fourdrinier; suction boxes and vacuum pumps. Can. Pulp Paper Ind. 6, no. 12: 8-10 (December, 1953).

The author discusses the important factors in the installation of the barometric legs and the selection of suitable vacuum pumps to obtain sufficient water removal from the Fourdriner wire under different conditions of machine design, speed, and width, and for different products being manufactured from different raw materials. To prolong wire life, a minimum vacuum for maximum water removal should be carried in the suction boxes. For some types of paper the same amount of vacuum is required in all boxes, whereas in other cases it may be advisable to carry a different vacuum on each box. Different barometric-leg arrangements or the use of a separating tank with centrifugal pump (if the paper mill has no basement of sufficient depth) in addition to the vacuum pump are discussed. To obtain the proper selection of a vacuum pump for any particular application, the pump manufacturer should be provided with complete data on the machine. 5 diagrams. E.S.

MACHINERY—SUCTION ROLLS

PAPER-MAKER (LONDON). Knowledge and its enlargement. No. 2. Suction rolls in papermaking. Some notes on suction pick up. Paper-Maker (London) 126, no. 6: 448, 450, 454, 456, 458 (December, 1953); 127, no. 1: 34-5 (January, 1954); *cf.* B.I.P.C. 24: 484.

In the first part the design and mode of operation of suction rolls are described and illustrated with an actual example and a simplified mathematical analysis. The second part deals with the design and operation of suction pickup units (*cf.* also B.I.P.C. 24: 32, 372). 8 diagrams. E.S.

MACHINERY—THICKENERS

GILLES, THOMAS L., and PINEO, MALCOLM B. Operating comparison of standard and valveless deckers on screened, bleachable pine kraft pulp. Tappi 37, no. 1: 46-8 (January, 1954).

Data and descriptions are given to show the operating characteristics of a valveless and a standard vacuum filter. The machines are approximately equal in capacity. However, the valveless decker has advantages of lower initial and operating costs and greater ease of operation. 1 table and 2 diagrams. E.S.

MACHINERY—WIRES

BRECHT, WALTER, and ROSENLEW, NILS. Contribution to the technological characterization of paper-machine wires. Das Papier 7, no. 19/20: 381-8; no. 23/24: 478-83 (October, December, 1953). [In German; English and French summaries]

For the characterization of paper-machine wires in commercial practice additional information regarding the drainage properties of the wires is highly desirable. As the so-called open-wire area (total area of all wire holes) (I) is used as a criterion, the correlation between (I) and fineness of wire weave was investigated; the preliminary experiments were made with plain water on nonmoving and tensionless wires of different weaves. Mathematical and graphical methods were developed and their applications are discussed; an optical instrument for measuring (I) and another instrument used for determining the flow of water through wires are also described. The results of these tests show only a limited relationship between (I) and the drainage efficiency of wires. Further studies on traveling wires are contemplated

to test the applicability of the present data under these conditions. 4 tables, 17 figures, and 2 footnotes. E.S.

ELLIOTT, HARRISON. The Fourdrinier wire; its history, structure, and function. Paper Maker [U. S.] 23, no. 1: 21-5 + 1 insert (February, 1954).

The history of the Fourdrinier wire is traced, from Robert's woven copper cloth about 10 feet long and 25 inches wide to its present bronze counterpart estimated at 100 feet long and 300 inches wide. Individuals credited with the development of the wire are William Staniar, Cornelius Van Houten, Robert and William Buchanan, John McMurray, and Charles Smith. The structure of the wire; the processes of wire drawing, weaving, and seaming; and the loom employed for its manufacture are described. 5 illustrations and a bibliography with 9 references. R.A.S.

MCQUAIDE, J. A. Water removal on the Fourdrinier; wire performance. Can. Pulp Paper Ind. 6, no. 12: 12, 14, 16 (December, 1953).

The author discusses construction materials for Fourdrinier wires, weaves, wire wear and its accelerating causes, different types of corrosion intensified by high temperatures, high aeration, and high or low pH, and trials with new metals and combinations of alloys. 4 figures. E.S.

MATERIALS HANDLING

ANON. Air tubes give Scott new aid in quality control. Paper Mill News 77, no. 4: 66 (Jan. 23, 1954).

An Airtube system is used at the Chester, Pa. plant of Scott Paper Co. to speed up quality control operation; paper samples from the paper machines reach the quality testing laboratory in 10 seconds, compared with a former 3-minute round trip for a messenger. 3 illustrations. R.A.S.

ANON. Blaw-Knox pulpwood grapples; a pictorial review. Paper Mill News 77, no. 4: 80-1 (Jan. 23, 1954).

Grapples, principally of the two-line type, manufactured by Blaw-Knox Co., Pittsburgh, Pa. are pictured; capacities range from 1/6 to 2 cords. 9 illustrations. R.A.S.

ANON. Clark announces new equipment. Paper Mill News 77, no. 4: 79 (Jan. 23, 1954).

A description is given of the features employed in the "Powrworker 26" line of powered hand trucks for materials handling manufactured by Clark Equipment Co., Battle Creek, Mich. 1 illustration. R.A.S.

ANON. Clark offers swinging clamp device for selective tiering and removal of loads. Paper Mill News 77, no. 4: 82 (Jan. 23, 1954).

A swinging-clamp attachment with a 180-degree traverse for use with fork-lift trucks manufactured by Clark Equipment Co., Battle Creek, Mich. is described. 3 figures. R.A.S.

ANON. Jeffrey's new wood handling system at Hammermill's mill at Erie, Pa. Paper Mill News 77, no. 4: 64-5 (Jan. 23, 1954); *cf.* B.I.P.C. 23: 107.

The dual system for handling soft- and hardwood logs designed and installed by The Jeffrey Manufacturing Co., Columbus, Ohio at the Hammermill Paper Co., Erie, Pa. is described. 1 flowsheet and 5 illustrations.
R.A.S.

ANON. Link-Belt equipment in paper and pulp mills. Paper Mill News 77, no. 4: 76-8 (Jan. 23, 1954).

Chain conveyors, sorting tables, vibrating screens, belt conveyors, trippers, feeders, and other Link-Belt equipment for handling problems in the pulp and paper industry are discussed briefly. 14 illustrations. R.A.S.

ANON. Vertical, palletless paper roll stacking cuts storage space needs 20%. Paper Mill News 77, no. 4: 72 (Jan. 23, 1954).

The revolving clamp attachment for industrial Skylift trucks is used at the Mobile, Ala. plant of Bemis Bro. Bag Co. to handle paper rolls for vertical storage, eliminating the need for pallets and saving space. 1 illustration.
R.A.S.

JÄNTTI, JORMA. The handling of pulp bales at Nuottasaari Mills. Paper and Timber (Finland) 35, no. 11: 429-34 (November, 1953). [In Finnish; English summary]

The mechanized handling of pulp bales with lift trucks and trailers at the Nuottasaari Mills of Oulu Oy to storage in the warehouse and from there to ships is described. A new harbor has just been completed; the mechanization of pulp handling has cut down transport costs to a fraction of the former level. 1 table and 4 figures. E.S.

SPEAKER, RICHARD L. Materials handling. Ind. Eng. Chem. 46, no. 1: 129-32 (January, 1954); *cf.* B.I.P.C. 23: 418.

The author reviews the literature of 1953 on materials handling, including sections on engineered systems, conveyor systems, fork trucks, pallets, monorail systems, bulk storage, and theory and training. 48 references.
R.A.S.

WAIDELICH, A. T. The economics of material handling. Paper Mill News 77, no. 4: 46 (Jan. 23, 1954).

The author discusses three steps essential for economical materials handling for new plants or modernization of existing facilities: reduction in handling, consideration of all possible methods for the resultant handling, and selection of the most economical and practicable plan. R.A.S.

MESQUITE

MARSHALL, E. D. The outlook for the utilization of mesquite. J. Forest Products Research Soc. 3, no. 5: 68-71, 220, 222; discussion: 222 (December, 1953).

Various successful methods of mechanical and chemical eradication have been developed for mesquite (*Prosopis* spp.), which has invaded extensive areas of range lands in the Southwest. Tables are presented showing the chemical analysis of mesquite wood, tannin content, and analysis of ash content. By grinding the entire tree and combining with a cheap binder, a hardboard suitable for interior use may be made; other possible uses are listed. 3 tables, 7 illustrations, and 1 map. E.S.

METERS AND RECORDERS

LANDESMAN, ARTHUR L. Liquid level measurement and control. Paper Trade J. 138, no. 2: 18, 22, 24, 26 (Jan. 8, 1954).

The author describes different methods for liquid-level measurement by the use of either hydrostatic pressure or floats riding on the liquid surface, with particular reference to the systems for pulp and paper mill applications developed by the Fischer & Porter Co. Control methods are also mentioned. 15 diagrams. E.S.

MICROCHEMISTRY

ANON. The scope of micro methods in the mill laboratory. Paper-Maker (London) 126, Annual Review no.: 5-7, 14 (1953).

Following a brief outline of the apparatus required, applications of micro-analysis in the pulp and paper mill laboratory are described, including the examination of metal surfaces, differentiation between acid and basic dyes or wool and cotton fibers, determination of pH and the presence of rosin, and spot tests for speck analysis. E.S.

MICROSCOPY

MCCRONE, WALTER C. Chemical microscopy. Anal. Chem. 26, no. 1: 42-9 (January, 1954).

The literature in chemical microscopy is reviewed, covering the period from 1949 to the end of 1952. 412 references. R.A.S.

TAYLOR, G. G., and BROWN, J. C. The uses of microscopy in textile dyeing and finishing. J. Soc. Dyers Colourists 69, no. 11: 396-402 + 4 plates; discussion: 402-3 (November, 1953).

The object of the paper is to review the application of microscopy to the study of textile fibers. A brief exposition is given of the best methods of mounting and examining various fibers, and the application of the techniques of polarized light, staining, and microtomy is discussed. Recent advances in the histology of protein fibers resulting from both visual and electron microscopy are described, and the more useful microscopic tests for protein fiber damage are covered. The structure of the natural cellulosic fibers, cotton and linen, is discussed, and the microscopical detection of chemical modifications to cellulose is described. An outline is given of some staining experiments which have a bearing on the structure of regenerated cellulosic fibers. 1 table, 26 photomicrographs, and 57 references. E.S.

MICROSCOPY (ELECTRON)

SWERDLOW, MAX. Electron microscopy. Anal. Chem. 26, no. 1: 34-42 (January, 1954).

A review is presented of the progress made in the past two years in electron microscopy, as disclosed by recent literature. 188 references. R.A.S.

MILL CONTROL

ELLIOTT, NORMAN J. Production planning and control. Chapter 1—The rationale of production planning. Boxboard Containers 72, no. 733: 26-9 (January, 1954).

The author urges the adoption of planning and control procedures as an

invaluable aid to production. He discusses a few practices which are sometimes confused with methods of production control, such as making out work orders which must be pushed to completion, pacing the plant by using an incentive piecework rate at one or more key spots, and meeting a delivery schedule which is modified as orders come in. The basic elements of planning and control, customer requirements, materials availability, and process-time availability, are described. 4 record forms. R.A.S.

LECKY, GEORGE C. Corrugated quality. Tappi 37, no. 1: 147-8A (January, 1954).

The quality control program of the F. J. Kress Box Co., Pittsburgh, Pa. for the manufacture of corrugated boxes is described. 1 table and 1 diagram. E.S.

MILL MANAGEMENT

BLUM, WILLIAM. New trends in management. Paper Mill News 77, no. 2: 12, 14, 16, 18, 20 (Jan. 9, 1954).

The author covers three general areas—executive inventory and development, employee opinion, and the problem of communication—in considering new trends in management. He outlines the technique of training for future promotion and methods of appraisal of potential. Steps for making decisions or clear thinking for foremen are listed, and job rotation and staff meetings recommended for training and improving employee relations. R.A.S.

PACKAGING

ANON. Foil lamination shifted to outside. Packaging Parade 22, no. 252: 40 (January, 1954).

The makers of "Junket" Brand Foods, Little Falls, N.Y. have switched the aluminum foil wrap which the product needs for protection from the inside of the package to the outside, thereby improving package appearance without lowering its protective value. 1 illustration. R.A.S.

ANON. Lamps shipped in cushioned paper bags. Packaging Parade 22, no. 252: 78-80 (January, 1954).

The method of packaging recently employed by General Electric Co., Cleveland for 12- and 16-inch circular-shaped Circline lamps is a paper envelope padded with macerated paper cushioning, foldovers at the top and bottom of the bag, and airspaces at danger points. The company has also begun using a dual pack, in which two different-size circular lamps are anchored in place one inside the other by a corrugated die-cut pad. 7 illustrations. R.A.S.

ANON. 120 million dollars worth of parts shipped . . . no damage. Packaging Parade 22, no. 252: 81-2 (January, 1954).

The main component of the packaging operation of the Curtiss-Wright Corp., Woodridge, N.J. is Celetex industrial cane fiberboard, chemically treated to make it oil- and greaseproof, water resistant, nonabrasive, and nondusting. The company's aircraft engine parts are cradled on the top and bottom with laminated layers of Celetex, placed in a reinforced corrugated container, and bound with steel strapping. Celetex layers possess varying degrees of rigidity from an inside softness to an outside hardness and achieve a negative pH factor, necessary to protect the part from surface corrosion in transit. 7 illustrations. R.A.S.

BERNOT, ANDRÉ. Fruit- and vegetable-handling centers. Papier, carton et cellulose 2, no. 5: 60, 63 (November-December, 1953). [In French]

Reference is made to French plans for the establishment of fruit- and vegetable-handling centers on a co-operative basis—at first in the largest cities —where the produce is received on a large scale, cleaned, weighed, and packaged in consumer-size units before delivery to the small distributor. The significance of this development for the French paper and board industry is pointed out. 1 table. E.S.

BOYCE, CHARLES W. Packaging and paper. Paper Mill News 77, no. 3: 12-14, 16, 18 (Jan. 16, 1954).

Trends in the use of paper for packaging are analyzed; the total consumption of packaging paper increased from one third of the total U. S. paper consumption in 1899 to nearly one half by 1953. The amount of paper used for packaging for the same period increased from 0.5 to 4 million tons; pictured along with this is the increase in use of paperboard, from 0.3 to 10 million tons. More than half of retail wrapping still employs paper, but paperboard far exceeds paper for shipping and protective unit of sale packaging. Intra-industry competition is viewed as the incentive to progress in packaging paper developments. 8 graphs. R.A.S.

KLEIN, MARIAN, SIMERL, L. E., and ADAMS, ERNEST. Moisture loss in frozen shrimp. Modern Packaging 27, no. 5: 139-42, 195-6 (January, 1954).

The packaging of frozen shrimp unglazed in a high-gloss waxed carton with a Tyton (trade name of Marathon Corp.) waxed-paper overwrap was found to be successful for 12 months' storage at 0°F. The process was sought as a replacement for the glazing of the shrimp which added 15-20% to the package weight and had other disadvantages. The Tyton overwrap is a 30-pound opaque paper waxed to 44 pounds with a special resin-fortified blend of waxes. Test results are presented on moisture and weight loss, package testing, taste tests, visual observation, and defrosting time. 3 tables, 6 figures, and 5 references. R.A.S.

MODERN PACKAGING. Guideposts to 1954. Modern Packaging 27, no. 5: 85-91, 190, 192-3 (January, 1954).

Packaging trends and developments that were of widest interest in 1953 are listed, including polyethylene-coated cellophane, tear tapes for preformed bags and shipping cases, combination ovenproof foil and fiber cartons, fiberboard shipping containers, unit and strip packages, printing on corrugated board, application of volatile corrosion inhibitors, and advances in machinery. 22 illustrations. R.A.S.

NAGEL, HERBERT. The selection of films for poultry packaging. Paper, Film and Foil Converter 28, no. 1: 29 (January, 1954).

The film properties required for the packaging of fresh and frozen poultry are discussed; none of the present films has all the necessary characteristics. 1 table. R.A.S.

PACKAGING—SANITATION

ANON. Paper bags and foodstuffs. Papier, carton et cellulose 2, no. 5: 84-6 (November-December, 1953). [In French]

Hygienic packaging of foodstuffs is receiving special attention in France at the present time. Active propaganda is being made against the use of old newspapers as wrapping paper, the use of hay and straw for packaging eggs, and the re-use of textile bags without adequate cleaning or sterilization. Single-use paper bags are recommended, particularly for flour. 1 illustration. E.S.

PAPER—COATED

LUKER, LESLIE G. Printing on process coated papers. Paper & Print 26, no. 4: 412, 414, 418 (Winter, 1953).

The author lists precautions which, when taken, should prevent undue losses in the printing of process-coated papers resulting from powdering, picking, ink sinking, and granular coating. The origin of the coated papers, problems which arose with their use, and a comparison of the papers with conventional art papers are given. R.A.S.

PATTON, C. W. Polyethylene coating on paper. Parts I and II. Paper, Film and Foil Converter 27, no. 12: 17-21 (December, 1953); 28, no. 1: 23-6 (January, 1954).

The author reviews some of the elementary factors involved in the use of polyethylene for coating paper, including properties of polyethylene (chemical resistance, swelling, water absorption, solvent transmission, gas permeability, solubility, and reaction to blending with waxes and to antioxidants), methods of conversion (extrusion-lamination, hot-melt coating, and solution coating), and applications. Results of tests with four commercially available polyethylene resins are included. 10 tables and 8 figures. R.A.S.

PAPER—DEFECTS

BECKETT, WILLIAM. Cause and correction of difficulties with offset papers. Natl. Lithographer 61, no. 1: 40-2 (January, 1954).

The author discusses the factors involved in the behavior of paper in offset printing and gives causes and corrective measures for preventing curl, expansion and contraction, squeezing, and distortion. The effect of the ink tack and press speed is considered, as well as the selection and blending of the paper fibers. 1 illustration. R.A.S.

PAPER—PHYSICAL PROPERTIES

CRAIG, F. A. Paper and papermaking; the contrary qualities of paper. Paper & Print 26, no. 4: 381-2, 384 (Winter, 1953).

The author describes the factors which affect paper strength and other characteristics (substance, opacity, pliability, absorbency, bulk, and flatness) which are not always compatible with high strength. The fundamental reasons for these "contrary" qualities and the necessary compromises for arriving at the best possible solution are discussed; the prevention of curl receives special attention. R.A.S.

PAPER AND PULP INDUSTRY

BERTIN-ROULLEAU, J. The pulp and paper industry of Norway. Rev. papiers et cartons 16, no. 22: 5, 7-9 (Nov. 15, 1953). [In French]

A brief statistical outline of the Norwegian pulp and paper industry is given, including a few historical data on the early beginnings and first mills. 7 tables and 4 illustrations. E.S.

CROCKER, DOUGLAS A. Tissue industry holds promise of bigger profits to merchants. Paper & Paper Products 95, no. 13: 1-2 (Jan. 5, 1954).

The annual rate of growth of tissue papers is 5.29% as published in a report issued by the National Industrial Conference Board in May, 1952; it is second only to construction paper and board, and 0.82% higher than the industry-wide average, 3.47%. Individual items which come under the general heading of tissue paper are listed, and the position of the paper merchant in the distribution of these varieties is discussed. Growth potentials emphasized are advertising and constant improvements in quality and value. 2 tables. R.A.S.

HOBBS, ROBERT B., and WILSON, WILLIAM K. Paper production on the upswing. Chem. Eng. News 32, no. 1: 40-2 (Jan. 4, 1954); *cf.* B.I.P.C. 23: 425-6.

For the first three quarters of 1953, total production of paper and board amounted to 19,915,000 tons, a 10.6% increase over 1952, and this level was being maintained in the last quarter. Paper was up 3.5% and board 18.4%. Variation was evident in the different categories; newsprint was down 6%, fine papers were down 3%, tissues and absorbent papers up 15%, and book papers up 11%. All types of boards were in greater production; container board and cardboard were especially strong. Wood pulp production showed an increase of 6.8% over the corresponding 1952 figures, with particularly significant increases in semichemical pulp (30% increase) and sulfate pulps, especially bleached sulfate (13.6% increase). All statistics are based on the first three quarters of 1953; prospects for 1954 are viewed as favorable. Trends in the industry are reviewed, including the use of ammonia-base sulfite cooking liquors, better utilization of available resources, research on the problem of waste disposal, refinements in bleaching apparatus and operations, and new outlets for paper products. 1 table and 2 diagrams. R.A.S.

JARLSBY, O. T. The forest industry yesterday, today, and tomorrow. Norsk Skogind. 7, no. 12: 435-42 (December, 1953). [In Norwegian; English summary]

The past, present, and future of the Norwegian pulp and paper industries are discussed, including statistical data. E.S.

MOON, D. G. The southern pulp and paper industry—past, present, and future. Southern Pulp Paper Mfr. 17, no. 1: 52, 54, 57-8, 60, 62, 128 (January, 1954).

The author traces the history of the production of pulp and paper in the South and describes the gradual development of the industry by a chronological listing of the mills with brief pertinent data on their start, process and raw materials used, type of product manufactured, and capacity. Statistics on the present status show 57 pulp mills and a total wood-pulp production of 8.4 million tons in 1952 (total for the United States, 16.5 million tons) and 38 additional paper mills and a total 1952 production of 10 million tons of paper and board (total for the United States, 24.4 million tons). Predictions made for the future include maintenance of twice the present wood-pulp capacity, growth of per capita consumption of paper products, and sufficient wood supplies as a result of good forest-management practices. 7 tables and 3 diagrams. R.A.S.

PAPER TRADE JOURNAL. Review and forecast section 1953-1954.

Paper Trade J. 138, no. 5: 23-6, 28, 30, 32, 34, 36, 38, 40, 42, 44-6, 48, 50, 52, 54, 56, 58, 60, 62-5 (Jan. 29, 1954).

An attempt is made to present a brief and concise picture of the pulp and paper industry for the year and a projection of the future. Included are articles by the following authors: Tinker, E. W. Industry hits 26 1/2 million-ton record—1 figure, p. 24; Swain, M. W. Paperboard had an outstanding year looking to '54 with confidence—1 figure, p. 25; Shorter, W. C. An advanced look at kraft paper, p. 26; Faegre, Robert. View of groundwood papers situation, p. 26; Worrell, Rufus I. Book paper industry at start of '54—1 figure, p. 28; Remley, Adam C. Writing paper business as I see it today, p. 30; Servotte, W. J. Where is tissue production headed, p. 30; Zima, J. J. Production of newsprint-1953—1 figure, p. 32; Hoffmaster, B. T. '53 good year for napkins expect an even better '54—2 figures, p. 34; Mateer, Raymond C. Future bright for towels and sanitary paper, p. 36; Jones, P. M. Merchants foresee less sales, more profits, p. 36; Strype, F. C., Jr. Exporters look forward to '54 with optimism, p. 38; Turcotte, L. P. Pulp industry in 1953, and outlook for 1954, p. 40; Morgan, Clyde B. Things look bright for dissolving pulps, p. 40; Knowlton, David C. Market pulp supply in 1953-1954—1 figure, p. 42; Erickson, Ernest. Woodpulp supply from Finland—1 table, p. 44; Nuttall, E. P. Slash in Swedish pulp offerings seen—1 figure, p. 45; Evans, John C. W. What we did in '53 and a guess at what's ahead—5 tables and 1 figure, p. 46, 48, 50; Fowler, R. M. Canadian industry advances again, prospects good for 1954—1 figure, p. 52, 54; Bromley, W. S. Pulpwood production in 1953 and outlook for 1954, p. 56; Waldman, Abraham. Cotton rags level off, p. 56, 58; Sutphin, Stuart B., Jr. Industry rise leaves waste paper behind, p. 60; Perry, Henry J. Progress made in waste paper utilization—1 table, p. 62; U. S. Department of Agriculture. *Crop Reporting Board.* What to expect in cotton linters—1 table, p. 63; Bixby, M. M. Outlook for papermaking chemicals, p. 63-4; Anon. What's ahead in hardboards, p. 64; and Mather, Glenn. Record year fiber drums; new uses seen in 1954—1 table, p. 65. R.A.S.

POULIOT, L. J. King pin of Canadian economy. Pulp Paper Mag. Can. 54, no. 13: 96-106 (December, 1953); Newsprint Service Bur. Bull. no. 432: 2-3, 6-8 (January, 1954); *cf.* B.I.P.C. 23: 341-2.

The gross value of products of the pulp and paper industry in Canada for 1952 amounted to $1,157,887,657, a 6.5% decrease from 1951's all-time high of $1,237,897,470. The net value of the production decreased 14% from that of 1951, amounting to $584,111,417. Two new combined pulp and paper mills went into production in 1952, bringing the total number of operating mills to 128. The 102 mills manufacturing pulp produced 8,968,009 tons valued at $650,021,180, representing decreases of 3.7% in volume and 10.7% in value. Production of paper and paperboards amounted to 7,201,800 tons valued at $838,105,108, a decrease of 0.3% in tonnage, but a rise of 1.7% in value. Newsprint paper, forming 79% of all paper produced in Canada, totaled 5,707,030 tons valued at $600,515,960, the highest ever recorded and an increase of 2.6% in tonnage and 6.4% in value. Pulpwood output (14,102,670 rough cords valued at $396,102,104) showed a decrease of 6.3% in volume, but an increase of 3.7% in value. Further statistics are given on materials used in pulp and manufacture, equipment and capacity, electricity, fuel, employment, exports and imports, and total export trade (wood and paper group formed about 32% of the total value of Canada's export trade). The data are taken from the annual report of the Dominion Bureau of Statistics to the Department of Trade and Commerce and are published in the pamphlet, "The pulp and paper industry 1952." 17 tables and 4 graphs in the first reference and 6 tables in the second. R.A.S.

RITCHIE, J. L. The market for wood pulp. Southern Pulp Paper Mfr. 17, no. 1: 102-5 (January, 1954).

The author predicts a rising level of world demand for market wood pulp as a result of increased consumption at the expense of waste paper and other competing fibers, an improvement in ability to compete against "own use" wood pulp (from integrated mills), the growth of paper and paperboard production in the Old World, a high-level consumption based on cyclical influences, and improvements in production and trade. Statistics are given comparing the consumption of market wood pulp with that of waste paper and rags and other fibers and also with "own use" wood pulp. 2 tables.
R.A.S.

STEVENSON, LOUIS T. Outlook for the United States paper industry in 1954. Tappi 37, no. 1: 22A, 24A, 26A, 28A (January, 1954); *cf.* B.I.P.C. 24: 37-8.

The author examines the current relationships between capacity and demand for the various segments of the industry and draws the following conclusions with regard to the outlook for 1954: Low points in consumption could be reached in March, 1954 of 120 in paperboard and 116 in the paper index (based on peak 1953 index of 130 for paperboard and 125 for paper), and averages estimated for the year are 126 and 121, respectively. Paperboard production is expected to drop below consumption, with the reverse anticipated for paper. Assumptions are made that building paper and board will approximate the 1952 level, and that newsprint will rise to 1,200,000 tons. 5 tables and 2 diagrams. R.A.S.

VOGEL, JOHN H. The growth of the pulp and paper industry in the South. Southern Pulp Paper Mfr. 17, no. 1: 70, 72, 74 (January, 1954).

The increase in production in the pulp and paper industry of the South during the past 25 years is compared with that of the country as a whole. The South accounted for 6% of the total value of production in 1929; this has increased to about 60% of the total wood pulp and 36% of the paper and paperboard production in the United States for 1952. Reasons for the changes of mill locations from the North to the South are given. 5 tables. R.A.S.

PAPER AND PULP INDUSTRY—DIRECTORIES

PULP & PAPER. Revisions of world woodpulp directory. Pulp & Paper 28, no. 1: 82 (January, 1954); *cf.* B.I.P.C. 24: 121.

Additions and corrections to the previously published directory for 1953 are listed. R.A.S.

PAPER AND PULP INDUSTRY—EDUCATION

BEAUDETTE, RAOUL P. Some practical aspects of training in paper mills. Tappi 37, no. 1: 129-31A (January, 1954).

The author outlines an industrial training program for use in a paper mill, based on the formula: the knowledge and skill required to do a job efficiently minus that which the operator already has equals that which he must acquire. Illustrations of helpful information are given for the addressing of mail, use of a chlorine injector, installation of hot water hoses, unloading of laps, blowing a digester, and operation of a trimmer. R.A.S.

PAPER AND PULP INDUSTRY—MARSHALL PLAN

ANON. APPA opposes U. S. financing of foreign mills. Paper Trade J. 138, no. 4: 22, 24 (Jan. 22, 1954).

The American Paper and Pulp Association voices its objections to the actions of the U. S. agencies financing foreign mills, primarily to the fact that these agencies are not required to give full advance information so that interested parties may give opinions. Figures are given on the amounts of loans made by the Foreign Operations Administration, the International Bank for Reconstruction and Development, the Export-Import Bank, and the Food and Agriculture Organization of the United Nations, and the possible effect on domestic economy is discussed. R.A.S.

PAPER AND PULP INDUSTRY—MUSEUMS

FOSTER, ROBERT. Going to Boston? Be sure to visit the Dard Hunter Paper Museum. Am. Printer 135, no. 1: 27, 56 (January, 1954); *cf.* B.I.P.C. 21: 29.

A short description is given of the Dard Hunter Paper Museum located at the Massachusetts Institute of Technology in Cambridge. 3 illustrations. R.A.S.

PAPER AND PULP INDUSTRY—PUBLIC RELATIONS

ANON. Community Relations Service of Southeastern Pulp and Paper Industry functioning. Southern Pulp Paper Mfr. 17, no. 1: 76, 78, 80, 82-4, 86-94 (January, 1954).

Talks were given at the Southeastern Pulp and Paper Industry's meeting for the formulation of the Community Relations Service by the following authors: Sutlive, Kirk. "Are we meeting the challenge," p. 82-3; Rochester, D. M. The birth of an idea, p. 83-4; Ferguson, Sydney. In-plant relationships, p. 84, 86-7; Robertson, Reuben B., Jr. "Good neighbors," p. 87-8; Gayner, E. J., III. Forestry relations, p. 88-90; Riis, Erling. Operating mills in the South, p. 91-2; and Coker, May Roper. Wife's role in community relations, p. 92-4. R.A.S.

PAPER AND PULP MILLS

ANON. A modern mill Les Papeteries Lux. Rev. papiers et cartons 16, no. 22: 13-17 (Nov. 15, 1953). [In French] *cf.* B.I.P.C. 23: 654.

The off-machine coating process and the installations of the French coating mill at Fures, near Grenoble are described. 7 illustrations (identical with those of the previous reference). E.S.

ANON. Quality production at the Papeteries de Bretagne. Papier, carton et cellulose 2, no. 5: 65-8 (November-December, 1953). [In French]

A brief description is given of the installations of the two-machine paper mill at Rennes on the river Vilaine in France, whose expansion and modernization program is expected to be completed in 1954. It will have a capacity of about 11,000 metric tons of high-grade wrapping papers (produced from purchased Scandinavian pulp) per year. The mill houses a Fourdrinier (Thiry, Belgium) and a Yankee machine (Voith, Germany). 9 illustrations. E.S.

CHEMICAL ENGINEERING. New plants and facilities under way 1953. Chem. Eng. 61, no. 1: 170-86 (January, 1954); *cf.* B.I.P.C. 23: 497.

A listing of plants and facilities in or related to the chemical process industries which were planned, under construction, or completed during 1953 includes a section (p. 180) on pulp and paper mills. R.A.S.

ENGEL, KURT. A visit to the paper mill Uetersen/Holstein of the Feldmühle, Papier- und Zellstoffwerke A.-G. Wochbl. Papierfabrik. 81, no. 19: 714-16 (Oct. 15, 1953). [In German]

The obsolete newsprint mill (which ceased operations prior to the last war) has now been completely revamped; the two paper machines produce medium-fine printing and writing papers. Pulpwood is received from Finland, chemical pulp from Sweden, and china clay from England. The provision of a suitable process water presented one of the principal problems of the plant. A brief review of the installations is given. 2 illustrations. E.S.

PAPER AND PULP MILLS—SANITATION

SCHWEISHEIMER, W. Paper dust: its effect on the worker. Paper Ind. 35, no. 10: 1126 (January, 1954).

The author discusses the causes of dust formation in a paper mill and the effect on the worker; symptoms of bronchial asthma are described. The necessity of proper ventilation and exhaust devices for removal of dust is emphasized. R.A.S.

PAPER MACHINE OPERATION

AYMEN DE LAGEARD, —. Control and regulation of moisture content and basis weight of paper and board. Assoc. tech. ind. papetière, Bull. no. 7: 203-13 (1953). [In French]

This discussion is based on investigations and research by Lippke, a German papermaker, and presents his opinions and experience. The author reviews the limitations of the different methods for measuring continuously the moisture content of the traveling web upon paper or board machines by determining: (*a*) the conductivity or electrical resistance, (*b*) the hygroscopic condition of the web, (*c*) the temperature of the web or the difference in temperature between the web and an adjacent drying cylinder, and (*d*) the dielectric properties of the web. The methods operating according to the (*d*) were found the most satisfactory. A similar principle is employed for measuring the square-meter weight (instrument developed by Lippke). For controlling the thickness of the sheet, β-rays and magnetic processes are described; the latter process is preferred. In conclusion, manual regulation and the possibilities, limitations, and economic advantages of automatic regulation of the above properties are discussed. 24 figures. E.S.

PAPER MANUFACTURE

CHEMICAL ENGINEERING. New processes and technology, 1952-53. Chem. Eng. 61, no. 1: 187-208 (January, 1954); *cf.* B.I.P.C. 23: 497-8.

A summary of chemical process and engineering developments which were announced or commercialized during the past two years is presented in tabular form, including a section on pulp and paper (p. 203-4). R.A.S.

PAPER SPECIALTIES

ANON. A bonanza in paper tableware. Paper Sales 14, no. 1: 14-15, 54 (January, 1954).

Paper goods sold in food stores amount to an annual income of $450 million; 75% of the total U. S. household paper volume is handled through food stores. A well-organized department of resale paper products and a collective group of paper-tableware items will effect a decided increase in sales. 1 table and 4 illustrations. R.A.S.

ANON. Windshield wipes. Paper Sales 14, no. 1: 18-19, 50-1 (January, 1954).

Paper towels for cleaning windshields are made from both kraft and bleached sulfite pulp. Generally composed of two sheets, the towels are given a wet-strength treatment, are made lint free, and are creped or embossed to improve their ability to clean off dirt. A good-size market exists in gas stations, large garages, truck pools, motor-coach company garages, and car-wash drive-ins. 5 illustrations. R.A.S.

BURTON, H. S. Acetylation of paper for use in chromatography. Chemistry & Industry no. 46: 1229-30 (Nov. 14, 1953).

Whatman No. 1 filter paper can be satisfactorily acetylated by immersion in 10% perchloric acid for 45 minutes, blotting or squeegeeing dry, and then immersing 75 minutes in a mixture of 150 parts acetic anhydride and 350 parts benzene at 0°C. with stirring. The sheets are removed, washed with water, and dried by blotting, followed by a dry current of air. Longer acetylation times caused weakening of the paper or even disintegration. The time may be shortened to 15 minutes by adding 4% sulfuric acid to the acetylation mixture. The author believes that a small continuous production unit would be possible. 3 references. K.W.,Jr.

DAY, FREDERICK T. Gummed papers. Paper Market: 178, 180, 182 (December, 1953); *cf.* B.I.P.C. 21: 793.

The article on the manufacture and uses of gummed paper is almost identical with the previous reference. R.A.S.

DAY, FREDERICK T. Inadequate sticking of adhesive labels. Paper & Print 26, no. 4: 410 (Winter, 1953).

Factors to be considered in the choice of an adhesive for label paper, ease of printing, and storage precautions before printing or using are discussed. R.A.S.

HIEATT, H. F. Processing of photo-recording paper. Instruments 27, no. 1: 132-3 (January, 1954).

Photographic paper for oscillography consists of a suspension of silver halides in gelatin coated upon the paper base; films or plates may also be used. When exposed to light, a latent image is formed upon the sensitized layer of the emulsion which is not visible until the material has been developed. Processing of the paper requires five steps; directions for the correct development, acid stop, fixing, washing, and drying are given. 2 illustrations. E.S.

SCOTT, J. E., and GOLBERG, L. Acetylation of paper for chromatography. Chemistry & Industry no. 2: 48-9 (Jan. 9, 1954).

Filter paper can be acetylated for chromatographic purposes by steeping overnight in pyridine followed by nine days at 37°C. in 16 parts pyridine and 10 parts acetic anhydride (to one part of paper). After 24 hours air drying, the paper was extracted with ether and methanol. It is white to very pale yellow in color, does not absorb water very readily and has very good mechanical properties. The combined acetic acid is 25% (D.S. about 1). 5 references. K.W.,Jr.

PARTICLE SIZE

ALEXANDER, G. B., and ILER, R. K. Determination of particle sizes in colloidal silica. J. Phys. Chem. 57, no. 9: 932-4 (December, 1953).

A series of alkali stabilized solutions of colloidal silica consisting of relatively uniform discrete nonporous particles ranging in diameter from about 16 to 60 mμ has been prepared and characterized in regard to (*a*) particle weight by light scattering, (*b*) particle size determined from electron micrographs, and (*c*) specific surface area of the dried silica, measured by nitrogen adsorption. The particles appear to consist of dense amorphous silica, since the "weight average" particle diameter, estimated from electron micrographs, agreed reasonably well with the "weight average" particle diameter calculated from the particle weight determined by light scattering, assuming a density of 2.2 for the silica; the ratio of the two figures ranged from 0.83 to 1.26. The particle diameter calculated from the specific surface area of the dried silica, in five out of six sols also was fairly close to the "surface average" particle size estimated from electron micrographs; the ratio of the two values ranged from 0.75 to 0.89. The uniformity of particle size in the sols is indicated by the fact that the "weight average" particle size, determined from electron micrographs, averaged only 26% greater than the "number average" size; this corresponds to a "weight average" particle weight about twice the "number average." 2 tables, 1 figure, and 7 references. E.S.

WORK, LINCOLN T. Size reduction. Ind. Eng. Chem. 46, no. 1: 138-40 (January, 1954); *cf.* B.I.P.C. 23: 430.

Sections included in this review of 1953 literature on size reduction cover particle-size measurement, grinding, classification and collection, and products and processes. 2 illustrations and 87 references. R.A.S.

PHOTOMICROGRAPHY

STRELIS, I., and GREEN, H. V. Improved technique for photomicrographs of pulp and paper fibres. Pulp Paper Mag. Can. 54, no. 13: 117-20 (December, 1953).

By adapting techniques well known to plant histologists and cytologists, a method for identification and study of pulp and paper fibers has been developed which gives results far superior to those achieved in the methods currently employed. The improved technique for preparation of microslides involves drying, staining, and mounting the material for study in terpineol-balsam, and has the advantage of providing a permanent slide for record and study. In the subsequent photomicrography, the resolution of selected detail is achieved by using color filters. Although this improved method is somewhat lengthier than present practice, it is not impractical; its benefits in precision and in disclosing detail are believed to enhance considerably the value of the microscope and camera as tools for research wherever cellulose fibers are the focus of attention. 7 photomicrographs and 6 references. E.S.

PHYSICAL TESTING—FASTNESS TO LIGHT

INTERNATIONAL ORGANISATION FOR STANDARDISATION. *Technical Committee on Textiles. Subcommittee on Colour Fastness Tests.* Proposed international tests for colour fastness of textiles. J. Soc. Dyers Colourists 69, no. 11: 409-29 (November, 1953).

The drafts for the specifications of the organization's proposed color fastness tests for textiles are reprinted. 13 tables and 2 diagrams. R.A.S.

SOCIETY OF DYERS AND COLOURISTS. *Fastness Tests Co-ordinating Committee.* The development of the geometric grey scales for fastness assessment. J. Soc. Dyers Colourists 69, no. 11: 404-9 + 4 plates (November, 1953).

The methods which have been used since 1914 for assessing the results of fastness tests are described in detail. The most recent method is to use gray scales for this purpose, and scales equal in spacing are now being distributed by both the Europäisch-Continentale Echtheits-Convention (E.C.E.) and the society. This method may well become standard all over the world. 8 tables, 17 figures, and 17 references. E.S.

PHYSICAL TESTING—PAPER—BURSTING STRENGTH

LHOMME, H. Bursting strength tests. Papeterie 75, no. 11: 731, 733, 735 (November, 1953). [In French]

The author describes experiments for testing the precision of bursting-strength testers to give identical results when different instruments of the same make are employed. A satisfactory instrument (I) with two controlled manometers was selected as reference standard. All testers which gave the same results as (I) had also to be consistent with one another. Paper and board samples as uniform as possible were selected and 10 tests each were made alternately at the same time and under identical conditions on (I) and another instrument being tested (II). About 96% of the results of this series varied within ± 5% which represents the permissible limits. Since only one series of tests was carried out with each instrument, another series was performed with two board samples (a thin and a somewhat thicker specimen) on (I) and one (II). The averages of 10 tests each are presented in tabular form and show a very good agreement. This proves that the bursting tester is a very precise instrument, provided it is well constructed and kept up. Higher variations in test results can usually be traced back to non-uniformity in paper and board; thin papers are especially likely to exhibit such variations. Since these are based on the paper structure, the bursting-strength tester should not be held responsible for them. 2 tables and 1 diagram. E.S.

PHYSICAL TESTING—PAPER—GLOSS

MIDDLETON, W. E. KNOWLES, and MUNGALL, A. G. An instrument for the measurement of distinctness-of-image gloss. Can. J. Technol. 31: 160-7 (July-August, 1953).

The type of gloss known as distinctness-of-image gloss, which controls the sharpness of images seen in a reflecting surface, has hitherto resisted instrumental measurement. An instrument has been developed for this purpose, essentially an automatic goniophotometer which scans rapidly over a small range of angles centered on the angle of specular reflection, and by electronic means measures the maximum slope of the goniophotometric curve. The meter readings given by this instrument correlate well with the judgments of

observers who use no optical aids. The principle of the instrument is the subject of a patent application. 2 tables, 5 diagrams, and 1 reference.
E.S.

PHYSICAL TESTING—PAPER—MOISTURE

G. An instrument for measuring paper moisture. Wochbl. Papierfabrik. 81, no. 20: 751 (Oct. 31, 1953). [In German]

A pocket-size instrument for the rapid measurement of moisture in paper (including running webs and piles) based on its electrical conductivity is described; a similar instrument serves for the detection of static electricity in paper. Both instruments are constructed by K. P. Mundinger in Renningen, Germany. 1 illustration. E.S.

PHYSICAL TESTING—PAPER—OIL PENETRATION

KAKEHASHI, MASARU, and IKA, SHUSAKI. Oil absorbability and printability of paper. Research Bull. Govt. Print. Bur. Tokyo, Japan no. 1: 20 p. (June, 1953). [In English]

The authors describe a photoelectric oil absorption meter similar to the apparatus of Vallandigham (*cf.* B.I.P.C. 17: 136-7). A drop of oil or other test liquid is spread over the surface of the paper specimen and the change in specular gloss of the oiled surface is observed. The degrees of oil absorption (time for gloss to fall to specified value) by a coated paper, a map paper, three uncoated printing papers, and a newsprint were determined by this apparatus using raw linseed oil, a 1:3 mixture of raw linseed oil and castor oil, two ink varnishes, and a news ink vehicle. The results of the tests with the linseed oil-castor oil mixture are compared with the results of the castor oil drop test. The variability of the test was studied and found to be small. Under fixed experimental conditions it is found that the amount of oil which is spread over the paper surface from an initial drop of constant size is independent of the paper surface. The logarithm of the degree of oil absorption is found to be proportional to the temperature of test. The degrees of oil absorption in handsheets made of groundwood, bleached linen, groundwood-sulfite, bleached sulfite, and mitsumata were observed and found to increase in the order named. The degree of oil absorption was found to increase with the amount of clay loading, with beating of the pulp, and with smoothness of the sheets. Additions of rosin size and melamine resin to the furnish had little effect on oil absorption. It is stated that oil absorbability is related to printability. 17 tables, 6 figures, and 15 references. G.R.S.

PHYSICAL TESTING—PAPER—PRINTABILITY

ANON. The printability of papers. Allgem. Papier-Rundschau no. 2: 58-9 (Jan. 26, 1953). [In German]

This is a summary of two Dutch papers by J. F. Monroy and F. J. M. Wijnekus of the Instituut voor Grafische Techniek in Amsterdam, in which the I.G.T. printing tester (I) and an auxiliary instrument for the automatic inking of the form are discussed. The use of (I) for determining pick resistance, the covering power of standard printing ink, the drying time of different inks, and the smoothness of paper are described. 3 illustrations.
E.S.

ANON. Testing the printability of paper with the I.G.T. tester. Wochbl. Papierfabrik. 81, no. 22: 819-22 (Nov. 30, 1953). [In German]

This is a similar description as given in the preceding reference, including

an additional application of the tester, i.e., the determination of the penetration of the ink during the first minute. The behavior of paper during printing by letterpress as well as by offset can be studied with the I.G.T. tester. 1 table and 6 figures. E.S.

BECKMAN, NORMAN J., DENZER, CARLTON W., and SEARS, GEORGE R. Testing methods for printability of paper. Progress Report Ten by The Institute of Paper Chemistry, *Appleton, Wis.* Am. Newspaper Publ. Assoc., Tech. Report no. 17: 16 p. (Jan. 7, 1954); *cf.* B.I.P.C. 24: 387-8.

This report deals primarily with a laboratory study of ink transfer to three newsprints of known relative printing quality. On the basis of behavior on the presses of a large metropolitan daily paper, one newsprint was classed as good, one as average, and one as poor in printing quality. The previously described techniques employing the inclined plane and roll apparatus were used to transfer ink to the papers from uniform ink films and by spreading drops of ink on the papers. The ink transfer data were used to calculate critical film thicknesses and ink absorptions. Data on apparent density, Gurley porosity, Thwing formation, gloss, Bekk smoothness, and Chapman smoothness are also presented. The ranking of the newsprints in order of decreasing printing quality is the same as the ranking in order of decreasing density, formation, smoothness, and gloss and increasing critical film thickness and ink absorption. The better-formed, denser, smoother, and less absorbent sheet is the better printing sheet. Similar tests of specimens of these papers which had suffered excursions from 50 to 75 or 90 and back to 50% R.H. showed that the newsprints experienced irreversible decreases in density, smoothness, and gloss and increases in critical film thickness and absorbency—changes which suggest poorer printing quality. 2 tables, 10 diagrams, and 4 references. E.S.

OLSSON, I., and PIHL, L. Printing studies at the Swedish Graphic Arts Research Laboratory—Stockholm, Sweden. Tappi 37, no. 1: 42-6 (January, 1954).

For studying the printability of paper, investigations of ink transfer between surfaces of the same or different kinds have been done at the Graphic Arts Research Laboratory in Sweden. The investigations have shown that an increased printing pressure increases the ink transfer, and an increased printing speed and ink viscosity decrease the ink transfer. Other variables influencing the ink transfer are the amount of ink on the printing surface, the roughness and the elasticity of the printed surface, and the diameter of the printing cylinders. The results are of importance for paper testing and for the development of better printing papers. 4 tables, 5 figures, and 6 references. E.S.

PHYSICAL TESTING—PAPER—STRENGTH

VOLLMER, W. The relation between tensile strength and bursting strength of paper. Paper-Maker (London) 126, Annual Review no.: 8-12, 14 (1953); *cf.* B.I.P.C. 24: 127.

This is a complete translation of the German original. 3 tables, 7 figures, and 6 footnotes. R.A.S.

PHYSICAL TESTING—PAPER—TENSILE STRENGTH

LE CACHEUX, P. Theoretical study of the tensile strength of papers and boards. Papeterie 75, no. 10: 659, 661, 663-5, 667, 669, 671, 673 (October, 1953). [In French]

Pointing to the empiricism used in determining the tensile strength of paper, the author approached the problem mathematically, thus arriving at the simple formulation in which the modulus of elasticity of the paper is shown to be approximately one third that of the fibers, when the moduli are expressed, respectively, in terms of the length of the paper or that of the fibers. Experimental data appear to verify the formulation. 3 tables and 3 diagrams. L.E.W.

PHYSICAL TESTING—PULP—WET STRENGTH

BRECHT, WALTER, and LANGER, HEINZ. The initial wet strength of chemical paper pulps. Das Papier 7, no. 23/24: 452-8 (December, 1953). [In German; English and French summaries]

The initial wet strength (I) of five different pulps, an unbleached spruce sulfite (II), an unbleached pine sulfate (III), a bleached spruce sulfate (IV), a bleached beech sulfite (V), and a bleached straw sulfate (VI), was investigated during seven stages each of an entire beating cycle. Each pulp at 6% consistency was beaten in a Voith laboratory beater with bronze tackle; the beating degree was determined according to the German standard 107 of Zellcheming, sheets were formed upon the Rapid-Köthen sheet machine, and (I) was determined with the "Darmstadt" wet-strength tester. The wet-strengthening effect of additions of fine fractions to pulps poor in mucilage was also studied. The results (described in detail) showed that (I) of coniferous pulps, particularly in the unbeaten condition, is considerably higher than the values obtained with (V) and (VI). Beating increases the (I) of all pulps; the best results were obtained with (II), a medium-hard sulfite, whereas hard sulfate pulps like (III) did not develop a maximum in (I) in the entire beating range which was carried to almost 90° S.-R. Soft short-fibered pulps gave inferior (I) values; (VI) proved to be superior to (V). (I) could be considerably increased in the unbeaten and little-beaten pulps through the addition of fine fractions. In the higher beating ranges no increases in (I) were obtained. Coniferous pulps responded better to additions of identical fine fractions than to those from groundwood pulps, whereas in short-fibered pulps, particularly (V), the groundwood fine fractions produced the better results. The addition of fine fractions—irrespective of the source—decreased the drainage rate of all pulps; however, this decrease was less than when the identical (I) was obtained by beating of the original pulp. No clear relationship could be established between decrease in drainage rate and gain in (I); the results indicate that if a pulp of definite (I) without great loss in drainage rate is required, the addition of mucilage to the unbeaten pulp is more effective than beating, and power expanded in beating is thereby saved. The significance of (I) for the evaluation of pulps is discussed. 1 table, 5 figures, and 5 references. E.S.

POWER, HYDRO-ELECTRIC

ANON. More power to Great Northern! Pulp & Paper 28, no. 1: 98-9, 101 (January, 1954); *cf.* B.I.P.C. 24: 222.

The description of the Ripogenus hydroelectric development of Great Northern Paper Co. at Kokadjo, Maine is similar to that in the previous reference. 1 map and 6 illustrations. R.A.S.

PRINTING AND PRINTER'S INK

LUKER, LESLIE G. A comprehensive approach to the potentialities and problems of odourized printing in the light of recent scientific advances. Brit. Printer 66, no. 394: 63-6 (January-February, 1954); *cf.* B.I.P.C. 21: 576.

The information presented by the author is essentially the same as that in the previous reference, with the addition of a few suitable compounds. 1 table. R.A.S.

PRINTING AND PRINTER'S INK—ANILINE PROCESS

LECRAW, JOHN. Flexographic printing plates. Tappi 37, no. 1: 135-7A (January, 1954).

The manufacture of vulcanized rubber plates for the flexographic process is outlined. E.S.

VINER, JOSEPH W. Flexographic printing inks. Tappi 37, no. 1: 131-4A (January, 1954); *cf.* B.I.P.C. 24: 391.

The author discusses the development of opaque flexographic inks, ingredients used in this type of ink, advantages and limitations of the process, and suitable stocks. Directions for the correct application of such inks are given. E.S.

ZUCKERMAN, ROBERT K. Flexographic printing presses. Tappi 37, no. 1: 134-5A (January, 1954).

Suitable printing units for the flexographic printing process are described. E.S.

PULP

GIERTZ, HANS WILHELM. A comparison between sulfite and sulfate pulps. Svensk Papperstidn. 56, no. 23: 893-9 (Dec. 15, 1953). [In Swedish; English summary]

The principal differences between sulfite and sulfate pulps are summarized, with particular reference to the differences in pentosan content, resistant pentosan, swelling properties, resistance to beating, paper-strength characteristics, opacity, and suitability for dissolving pulps. Several explanations by previous investigators are discussed, and special mention is made of the hypothesis of McKinney (*cf.* B.I.P.C. 16: 224), according to which ether bonds are formed in the hemicellulose fraction during sulfate cooking. If the formation of some kind of new bonds in the fiber walls during sulfate cooking is assumed, it becomes easily understandable why sulfate pulps are higher in pentosan content, swell less, are more difficult to beat, exhibit higher paper strength, and possess poorer dissolving properties than sulfite pulps. 11 references. E.S.

PULP—EVALUATION

EKSTAM, TORSTEN. Comparative beating investigation with different laboratory beating apparatus for pulp evaluation. Paper and Timber (Finland) 35, no. 11: 413-28; no. 12: 475-94 (November, December, 1953). [In English]

Comparative beating studies have been carried out with five bleached sulfite pulps, two unbleached sulfites, and three unbleached sulfate pulps in the Aylesford laboratory beater (I), the PFI mill (II), the Banning-Seybold beater (III), the Valley beater (IV), the Noble and Wood cycle beater (V), and the Lampén mill (VI) in five research laboratories in England, Finland, Norway, and Sweden. The pulp sent to the laboratories by the Central Laboratory in Finland was beaten and formed into the sheets according to the method used by each laboratory, as well as to the British standard method (TAPPI Standard T 205 m-50). The testing of all sheets was carried out in the Finnish Central Laboratory. The investigations show clearly that the strength values of pulps determined by the methods of the

different laboratories are of different order of magnitude; this is partly due to differences in the sheet-making procedures (especially the wet pressure), but principally to the beating instruments. All beaters grade the pulps investigated, with the exception of the softest bleached qualities, in the same order with regard to the strength properties, irrespective of whether these values have been determined for sheets made according to the British standard method or that of the particular laboratory. In general, the grading of the unbleached sulfites and sulfates on the basis of the beating time at any given wetness is the same in most of the beating instruments; the grading of bleached sulfites, on the other hand, is not satisfactory. (II) and (IV) (according to TAPPI) give strength values in good agreement with each other when the results are compared on a wetness (S.-R.) basis, which can be related to the equal type of beating. (I) and (III) give tensile, burst, fold, and opacity values in fairly good agreement with each other, whereas this is not the case as far as tear, apparent specific gravity, and air-permeability values are concerned. (I) gives lower tearing strength, higher apparent specific gravity, and denser sheets than (III). (VI) gives lower opacity values for all pulps than are obtained with bar-equipped beaters at the same wetness. (I) and (III) reduce the opacity figures least. (VI), in which the beating pressure cannot be altered, has a tendency to overbeat very soft pulps and is, hence, not suitable for this purpose. A direct comparison of two beaters each of the same type [(III) and (VI)] could not be made because of differences in sheetmaking procedures. With respect to beating time to reach a given wetness, no good agreement was found between two (III) beaters. The present investigation did not reveal whether or not the various beaters differentiate the pulps with regard to strength properties in the same order as mill beaters, since these were not included in the study. Previous investigations by Cottrall (*cf.* B.I.P.C. 8: 397) and Ekstam (*cf.* B.I.P.C. 21: 77-8) would indicate that this is possible. 25 tables, 24 figures, and 12 references. E.S.

PROFFITT, J. R., GRAHAM, H. M., PURCHASE, E. R., and BLUME, R. C. Suitability of wood pulp for acetylation. Tappi 37, no. 1: 28-32 (January, 1954).

Work at the Benger Laboratory of the Du Pont Co. has shown that the problem of acetylating-pulp evaluation can be separated into two distinct parts. The first of these, pulp processability in acetylation (I) can be carried out rapidly and conveniently by the pulp manufacturers, whereas the second, the determination of cellulose acetate quality, requires the spinning of yarns by highly specialized techniques and with apparatus which is commonly found only in the acetate (textile, film, or plastics) industry. The laboratory method for evaluating (I) involves: (1) the over-all reaction rate, (2) the rate of degradation of the cellulose acetate being produced, and (3) the rate of disappearance of filter-plugging particles during acetylation. These factors are determined accurately by periodic examination of the acetylating mixture during the later stages of an isothermal, sulfuric acid catalyzed, low-consistency acetylation reaction. The utility of the method is demonstrated by its application to the study of several alternative processes for the preparation of acetylating pulps from aspen. The work disclosed that products from prehydrolysis-sulfate and ammonia-base sulfite pulping of aspen acetylated with equal ease, provided the proper combination of bleaching steps is chosen. 6 figures and 5 references. E.S.

PULP AND PAPER—IMPURITIES

NICHOLSON, GEORGE B., JR. A suggested test method for the determination of the efficiency of reject removal. Tappi 37, no. 1: 150-5A (January, 1954).

Following a brief evaluation of existing procedures, a method for measuring the relative difference in the amount of rejects at two points in the same system is proposed, which is limited to samples containing rejects of a specific gravity greater than 0.1 and of a size between 6 and 80 mesh. Details of sample taking, analysis, and reporting the results are outlined. The need for an accurate method of this type, particularly for checking the performance of equipment for removing rejects from pulp, is stressed. 2 tables and 5 figures. E.S.

PURIFIED WOOD FIBER

LEVITIN, N., and SCHWARTZ, H. Delignification of spruce sawdust with chlorine dioxide. J. Forest Products Research Soc. 3, no. 5: 78-84; discussion: 84 (December, 1953); Pulp Paper Mag. Can. 55, no. 1: 92-8 (January, 1954).

Spruce sawdust has been delignified on a laboratory scale with chlorine dioxide as the delignifying agent. Results of many variations in technique are shown. A multistage laboratory procedure was developed which included acid and alkali pretreatments, followed by two chlorine dioxide stages, with an intermediate alkali treatment. Using 20-27% chlorine dioxide, it was possible to obtain white pulps in 40-49% yield with α-cellulose values up to 87.5%. Results are also reported for a few preliminary experiments on alkaline purification of pulps secured and on the evaluation of these pulps for acetylation purposes. 7 tables and 23 references. E.S.

QUOTATIONS

ELLIOTT, HARRISON. Paperiana. Paper Maker [U. S.] 23, no. 1: 46-7 (February, 1954).

Quotations, mainly from writers of the 18th and early 19th century, are reprinted; the selections contain comments on paper. R.A.S.

REEDS

JAYME, GEORG, BRANSCHEID, FRIEDRICH, and HARDERS-STEINHÄUSER, MARIANNE. The manufacture of dissolving pulps with low ash content from grasses; the pulping of reeds, *Phragmites communis* Trin. Das Papier 7, no. 23/24: 459-66 (December, 1953). [In German; English and French summaries]

The authors report the results of pulping studies with reeds from the Danube estuary carried out at Darmstadt during 1942-44. Following a review of the pertinent literature, the anatomy, chemical composition, and fiber dimensions of the investigated specimens are discussed. The chemical analysis gave the following values: Cross and Bevan cellulose, 60.26%; pure cellulose, 46.1%; resistant pure cellulose (α-cellulose), 43.48%; Halse lignin, 19.27%; ash, 2.89% (of which 2.31% consisted of silica); and pentosans, 21.08%. The thick-walled fibers with an average length of 0.917 mm. do not make them attractive for paper manufacture, whereas the high percentage of pure resistant cellulose would indicate their suitability for dissolving pulps, provided the high pentosan and ash contents can be sufficiently reduced. Sulfite cooks yielded an unbleached pulp with 3.4% ash, which the conventional three-stage bleach (chlorine-alkali-hypochlorite) lowered to 1.7%. Such a pulp is not suitable for rayon manufacture. The microscopic study of the material revealed the reason for this high ash content. The pulp still contained large aggregates of silicified epidermis cells which tightly adhered to the cuticle; on acid digestion, the cuticle does not dissolve but is ruptured into coarse particles which, on account of their size, are retained by the pulp fibers and not removed mechanically on washing. Hot purification of

the sulfite pulp, on the other hand, is very effective and yields a pulp with 0.075% silica. However, even this slight amount is not finely dispersed, but is still present in the form of small aggregates of epidermis cells. Straight sulfate pulping yielded an unbleached pulp (46.8%) with 91.56% α-cellulose, 0.75% lignin, 0.39% ash, and 15.76% pentosans. A simple three-stage bleach reduced the ash content to 0.2% (of which 20% is silica); however, the high pentosan content made the pulp unsuitable for dissolving purposes. When the sulfate cook was preceded by an acid prehydrolysis and followed by a simple three-stage bleach, a pulp in 28.38% yield (referred to the nonprehydrolyzed ovendry starting material) with an α-content of 91.5%, 1.79% pentosans, and 0.13% ash (of which 0.024% was silica free from cell aggregates) was obtained. The cells dissolved during the alkaline digestion and could no longer be detected in either spent liquor or effluent. However, the latter contained the characteristic crystals of a calcium salt which is also present in the epidermis, but either removed on washing or during the first (acid) stage of bleaching. A prehydrolysis-sulfate cook gives therefore the optimum results with regard to ash and chemical purity; the removal of the leaves and sheaths (which may contain up to 20% silica) from the stalks prior to cooking would without doubt improve the ash problem further. 2 tables, 9 figures, and 29 references. E.S.

RESEARCH

GALLAY, WILFRED. From art toward science in papermaking. Proc. Tech. Sect., Can. Pulp Paper Assoc. 39: 238-40 (1953).

The author classifies the important phases in pulp and paper manufacture in which more knowledge must be obtained under the four headings: (1) constitution and properties of the individual chemical constituents of wood, (2) the structure and physicochemical and physical properties of pulp fibers, (3) the interaction between pulp fibers and water over a range of important variables, and (4) the basic physical chemistry and physics involved in the whole series of processes which constitute papermaking. Some general examples, particularly of (2) to (4), are given to illustrate some of the problems where significant advances in applied development may be made. E.S.

KIAER, HANS TH. The importance of research activities. Norsk Skogind. 7, no. 12: 452-5, 457 (December, 1953). [In Norwegian; English summary]

The author discusses the importance of fundamental and applied research, with particular reference to technical and economic research carried out by the Norwegian institutes under the auspices of the Forestry and Forest Industries' Research Organization. E.S.

RESEARCH LABORATORIES

ANON. Institut Français de l'Emballage et du Conditionnement, a new link between papermakers and users. Papier, carton et cellulose 2, no. 5: 79-83 (November-December, 1953). [In French]

The organization and services of the French packaging institute (abbreviation: l'I.F.E.C.), a nonprofit body founded in 1951, are described. Sections on the testing laboratory, the organization of the annual French packaging congresses, and American military specifications of interest to French users are included. 2 tables and 7 illustrations. E.S.

H. Fifty years Fachgemeinschaft Druck und Papier; the opening of the Institut für Druckmaschinen und Druckverfahren.

Wochbl. Papierfabrik. 81, no. 20: 750 (Oct. 31, 1953). [In German]

Sponsored by German manufacturers of printing machinery, a new "institute for printing machinery and processes" has recently been inaugurated at Darmstadt, in the vicinity of the existing institutes for paper manufacture and cellulose chemistry; all these institutes are affiliated with the university at Darmstadt. Wolfram Eschenbach is the director of the new institute. The opening ceremonies are described briefly. E.S.

MUNDS, —. Visit to the institutes for paper manufacture and cellulose chemistry at the university at Darmstadt. Wochbl. Papierfabrik. 81, no. 21: 785-6 (Nov. 15, 1953). [In German]

The reconstruction and new installations at both institutes are described briefly. E.S.

ROOFING FELTS

ANON. The start of the largest saturating-felt machine of the world at the Rohpappenfabrik AG in Worms. Das Papier 7, no. 23/24: 500-1 (December, 1953). [In German]

The expansion program of the German felt mill making saturating felt for flooring (trade name Stragula flooring) and roofing from rags and waste paper is described briefly. A new machine room has been constructed which houses a Fourdrinier felt machine (operating width 4.2 m.) with a daily output of approximately 80 metric tons of saturating felt. E.S.

ROSIN

PEJOSKI, BRAN. World production of rosin and turpentine. Das Papier 7, no. 23/24: 498-9 (December, 1953). [In German]

The Naval Stores international yearbook publishes statistics on the world production of rosin and turpentine, but does not cover all countries. Estimated production figures for the countries omitted in the 1953 yearbook (Russia, Yugoslavia, Germany, Austria, Italy, Poland, and Bulgaria in Europe and Turkey, Indonesia, India, Pakistan, Indochina, and China in Asia) are given. According to this compilation, America supplies 65% of the world rosin, and 54% of the turpentine production; Europe, 25 and 32%; and Asia, 10 and 14%, respectively. 3 tables and 1 map. E.S.

RUBBER

STEVENS, W. H. Latex in paper. Rubber Developments 6, no. 4: 102-11 (Winter, 1953).

The author reviews past experience in the use of natural rubber for the manufacture of paper and board, either by application during the manufacturing process (beater or wet-end addition), with particular reference to the basic patents by Frederick Kaye, or by a separate conversion process (coating or impregnation). One of the drawbacks of the early products was the limited resistance to aging, particularly of those with a low proportion of latex dispersed in a mat of fibers which was extensively exposed to the harmful effects of oxygen and light. Products containing a greater amount of rubber (20% or more) can be more effectively protected from oxidation, and interest in such composite paper-rubber products is increasing. A considerable amount of material of this type has been manufactured outside Great Britain, particularly in the United States, a principal consumer being

the footwear industry. A list of 15 applications of rubberized papers is appended. 4 tables, 4 figures, 14 footnotes, and a bibliography with 18 references. E.S.

SAFETY

AIKEN, L. A. Good housekeeping. Pulp Paper Mag. Can. 54, no. 13: 176, 181-2 (December, 1953).

The author cites accidents caused as a result of poor housekeeping, shown to be the cause of 16% of all disabling accidents occurring during 1952. Important items of methods of good housekeeping are discussed under the headings: aisles and passageways, elevators, fire-fighting equipment, flooring, lighting, painting, sanitation, stairways, and storage. R.A.S.

SEMI-CHEMICAL PULPING PROCESS

CENTOLA, G., PANCIROLLI, F., and CÉRAGIOLI, G. The cooking of annual plants with lime and sulfur. Assoc. tech. ind. papetière, Bull. no. 7: 193-9 (1953). [In French] *cf.* B.I.P.C. 23: 279.

This is the identical article as previously presented in Italian. 11 tables, 1 diagram, and 17 references. E.S.

SHIPPING CONTAINERS

ROBERTS, J. R., and FISKEN, A. M. Ply-Veneer shipping containers. J. Forest Products Research Soc. 3, no. 5: 105-7; discussion: 107 (December, 1953); *cf.* B.I.P.C. 23: 826.

A description is given of the Ply-Veneer containerboard produced by the Weyerhaeuser Timber Co. The manufacture of the board and containers therefrom, flexibility of design, advantages, and integration with lumber and pulp operations are discussed. 4 tables. R.A.S.

UNION BAG & PAPER CORPORATION, *New York.* New tomato box. Fibre Containers 38, no. 12: 143 (December, 1953).

A dual-purpose corrugated tomato box made from sulfur-impregnated corrugating medium consists of a die-cut body with self-locking bottom and friction-lock cover. A divider separates the box into two compartments; only two stitches are required to set it up. The closure permits an easy fit over a bulge pack without distortion. The box holds 40 pounds of tomatoes for shipping from the grower to the commission merchant; after grading and prepackaging the box can be re-used holding 30 units of prepackaged tomatoes. It can be relocked and shipped without tape or other sealing material. 2 illustrations. E.S.

SHIPPING CONTAINERS—MULTIWALL BAGS

ANON. Basic types of multi-wall sacks. Paper Container 70, no. 1: 8-9 (January, 1954).

Multiwall paper bags lined or coated with polyethylene are recommended for the shipment of a number of smaller packages with hygroscopic pulverulent contents (egg powder, flour, sugar, salt, etc.). The five principal types of multiwall bags and their closures are described; special precautions for waterproofing the seams are listed. Tests made with these sacks as carriers and protectors have proved their suitability for such contents. 5 diagrams. E.S.

SHIPPING CONTAINERS—TESTING

CANDELL, EARL B. What the consumer expects of the box manufacturer. Tappi 37, no. 1: 144-7A (January, 1954).

The customer expects correct delivery dates and uniformity of performance for a given specification both between vendors and between lots of an individual vendor. Details of required specifications and of the activities of the testing laboratory of the Lamp Division of the General Electric Co. at Cleveland, Ohio for checking packaging materials are given. The fluctuations in the monthly samplings of typical box shipments revealed by the laboratory are discussed. 1 diagram. E.S.

KELLICUTT, K. Q., and LANDT, E. F. Basic design data for solid fiberboard shipping containers. J. Forest Products Research Soc. 3, no. 5: 90-4; discussion: 94, 224 (December, 1953); *cf.* B.I.P.C. 23: 126.

The authors discuss the use of a formula for predicting the top-to-bottom compressive strength of solid fiberboard boxes, as well as a means of interpreting the strength values for various moisture contents of the fiberboard and a means of determining stacking loads for boxes in storage. The box strength calculator, which simplifies the use of design data for both solid and corrugated boxes, is described. 5 tables, 6 figures, and 14 references. E.S.

SPECIFICATIONS

ANON. Beer carrier packaging specifications. Fibre Containers 38, no. 11: 106, 108, 110, 115-16 (November, 1953).

An interesting controversy has arisen among the rail classifications committees, the glass container manufacturers, the brewers, the folding carton manufacturers, the chipboard-partition manufacturers, and corrugated container manufacturers over specifications for the six-bottle, carry-home carton for beer in nonreturnable glass bottles. On account of high bottle breakage in shipments by rail, the rail classification committees propose to add a note to the Uniform and Consolidated Freight Classifications that for the above conditions all bottles must be separated by double-face corrugated board, replacing the previously permitted chipboard partitions in the carry-out containers, the former being claimed to be superior to the latter. However, this would limit the packaging to the use of the so-called Holey carrier, developed by the Container Corp. of America. Hearings on the subject were held in three different cities in September, 1953 and the views expressed by the interested parties are summarized. They covered the possible poor quality of the glass bottles and chipboard partitions, the rough handling by the railroads, the undesirability of limiting such packaging to one type of carrier, the economics of the situation, and the insufficient evidence from which most conclusions were drawn. Most parties opposed changes in the specifications until more experience through research had been gained. The unofficial word has been that the Classification Committees will defer final action on the proposals pending the completion of further tests and studies. 8 figures. E.S.

SPECTROPHOTOMETRY

MELLON, M. G. Light absorption spectrometry. Anal. Chem. 26, no. 1: 2-11 (January, 1954).

A review of the literature published during the past two years in the field of light absorption spectrometry is presented; selections were made of repre-

sentative examples in references to the chemistry and physics involved and applications. 1 table and 483 references. R.A.S.

ROSENBAUM, E. J. Ultraviolet absorption spectrophotometry. Anal. Chem. 26, no. 1: 20-6 (January, 1954); *cf.* B.I.P.C. 22: 436.

The literature in the field of ultraviolet absorption spectrophotometry published during the two-year period since the last review in this series was printed is covered. 226 references. R.A.S.

SPECTROSCOPY, INFRARED

GORE, ROBERT C. Infrared spectroscopy. Anal. Chem. 26, no. 1: 11-19 (January, 1954); *cf.* B.I.P.C. 22: 436.

A review is presented of the literature which appeared during the past two years in the field of infrared spectroscopy. 656 references. R.A.S.

SPRUCE

KIELLANDER, C. L. The continental spruce. Parts I and II. Svensk Papperstidn. 56, no. 23: 900-19; no. 24: 941-54 (Dec. 15, 31, 1953). [In Swedish; German summary]

Spruce trees from continental Europe (exclusive of Finland and Russia) (I) growing in southern Sweden have proved far superior to native species with regard to annual increment and resistance to late frosts. The reasons for this phenomenon, the possibilities for the cultivation of the most appropriate species of (I) in Sweden, and the problem of acquiring sufficient amounts of seed at present and in the future from native and foreign sources are discussed in a rather detailed article. 14 tables, 5 figures, 5 maps, and 88 references. E.S.

STANDARDIZATION

PRESSON, J. EARL. Central Fibre's 19 plants save by standardizing. Fibre Containers 38, no. 12: 55-6, 58 (December, 1953).

The author outlines his company's approach to the standardization of office procedures in handling quotations, billing, shipping, etc. in its 19 plants. One of the first steps was the simplification and standardization of the various types of forms required, with the result that their number was reduced from 80 to 17. The steps in processing an order after the changes were made and the advantages of the program are outlined. 2 examples of forms (a straight bill of loading and an original invoice). E.S.

STATISTICAL METHODS

BEALL, GEOFFREY. Analysis of variance in dealing with mill data. Tappi 37, no. 1: 123-4A (January, 1954).

Analysis of variance is concerned with distinguishing genuine sources of variation from chance elements. Several simple applications of analysis of variance to mill problems are presented without detail. Little will be gained by controlling causes of variation whose contribution to the total variation is small. Experiments should not be made with combinations of variables which have no practical significance. 1 table. R.K.E.

GUENTHER, K. W. Analysis technique for hardboard pilot plants. J. Forest Products Research Soc. 3, no. 5: 153-5; discussion: 155 (December, 1953).

An explanation is given for using statistical methods to determine characteristics of hardboards produced from various formulations and by alterations in the manufacturing process. The technique facilitates experimental analysis and makes use of previously acquired data. 2 tables and 6 figures. E.S.

STEAM POWER

ANON. New boiler at St. Croix adds 2500 KW to power capacity. Paper Ind. 35, no. 10: 1098-9 (January, 1954).

A brief description is given of a new furnace which the St. Croix Paper Co. in Woodland, Maine recently completed. The boiler is housed in a new structure and burns Minto coal from New Brunswick. No ash handling is involved, because the molten slag is drawn off once daily through a slag tap. 4 illustrations. E.S.

CLARK, W. H. D. Design and operation of furnaces for burning bark and wood. Proc. Tech. Sect., Can. Pulp Paper Assoc. 39: 196-200; discussion: 200-2 (1953); Pulp Paper Mag. Can. 54, no. 4: 96-100 (March, 1953).

The author describes the designs of several Dutch oven and spreader type steam-generating units for burning wood, either alone or in combination with other fuels, which the Combustion Engineering Corp. Ltd. has developed since the war. If the fuel can be fed mechanically at a controlled rate, as on the West Coast, the spreader type offers decided advantages, whereas for burning bark in Eastern mills the Dutch oven type will be preferable, particularly on account of its ability to operate without hogs or feeder. Experience has shown that it is possible to design units for wood fuel with every expectation that they will meet their performance predictions and that the various peculiarities of this unusual fuel will not result in any operating difficulties. However, control and operating problems cannot be considered as completely solved and will repay further development work. 1 table and 10 figures. E.S.

WADE, CHAS. F. Boiler brickwork. Paper-Maker (London) 127, no. 1: 11-12, 14 (January, 1954).

The author discusses the functions of boiler brickwork and stresses the need for correct initial installation and maintenance in as near to perfect condition as is practicable. Particular attention is paid to the correct height of fire bridges, air- and gastightness, and minimum frictional resistance to gas flow. 6 diagrams. E.S.

STREAM POLLUTION

ANON. Mill waste grows cows and high corn. Pulp & Paper 28, no. 1: 36-8 (January, 1954).

The system of impounding the waste water from the Springhill, La. kraft pulp and paper mill of International Paper Co. in a huge basin (I) from April to October, and releasing the waste through a smaller impounding basin (II) into Bodcau Bayou (III) under controlled conditions from October to April is described. During the summer months fresh water is stored in (II) and game and commercial fish of excellent quality are grown in it during this period; they are returned to (III) when the waste from (I) is cascaded into (II). The Louisiana State University supervises the fish program and is also conducting tests and experiments with extensive pastures and gardens alongside (I). Cows and calves raised exclusively on black water on pastures irrigated with it have done exactly as well as those raised with 100% fresh water. Corn crops and golf greens are thriving on the irrigation with water from (I). 1 map and 5 illustrations. E.S.

CANADIAN PULP AND PAPER ASSOCIATION. *Waste Committee.* A bibliography of the literature on stream pollution. Proc. Tech. Sect., Can. Pulp Paper Assoc. 39: 378-83 (1953).

An annotated bibliography covering the period from January, 1951 to July, 1953 is presented. 122 references. E.S.

GEHM, HARRY W. Waste disposal problems of small New England mills. Tappi 37, no. 1: 124-6A (January, 1954).

The author discusses disposal problems in this area involving the character of the mill discharge, its effects on the stream, and its response to existing water-treatment methods, taking the frequently unique self-purification properties of small shallow New England streams into account, where purification rates may increase from 5 to 10 times those observed for streams of cannular cross section. Sufficient treatment of mill effluents so that nuisance does not occur or providing more water in summer through storage and prudent water regulation of existing supplies offer the two possible approaches to alleviation of pollution under these conditions. E.S.

MURDOCK, HAROLD R., and GEHM, H. W. Water and waste in the wood pulp industry. Sewage and Ind. Wastes 26, no. 1: 71-80; discussion: 80-2 (January, 1954).

Following a brief review of developments in the U. S. pulp industry from 1932 to 1952, with particular reference to the healthy growth pattern of the kraft pulp industry and the practical stagnation of the sulfite industry (including statistical data), the first author discusses the water-pollution problem involved in the sulfite process, research on spent sulfite liquor, and progress made to date. 3 tables, 4 diagrams, and 8 references. A general discussion by the second author is appended. E.S.

STROBOSCOPIC LIGHT

ANON. Stroboscopes aid waxed wrapper printing. Brit. Packer 15, no. 12: 828-9 (December, 1953); Paper Box Bag Maker: 288-90 (December, 1953); Paper Market: 20, 22, 24 (January, 1954).

Applications of the stroboscope to the control of flexographic printing while the web is running at full speed on the press are described. 3 illustrations. R.A.S.

SUGARS

LAUNER, HERBERT F., WILSON, WILLIAM K., and FLYNN, JOSEPH H. Determination of glucose by means of sodium chlorite. J. Research Natl. Bur. Standards 51, no. 5: 237-45 (November, 1953).

This work was undertaken preliminary to a study of the determination of the aldehyde content of cellulose. The oxidation of several aldoses with acid sodium chlorite solution was investigated to obtain a method for the determination of aldehyde groups in sugars and their polymers. The kinetics of the oxidation of glucose and cellobiose were studied over the experimental ranges 3.4-4.4 pH, 30-65°C., 0.005-0.15-*M* sodium chlorite, and 0.00006-0.0016-*M* aldose, both by the determination of the change in chlorite concentration by iodometric titration and by the photometric measurement of chlorine dioxide formed. The rate of oxidation was found to be approximately first order with respect to aldose and chlorous acid. The measurement of the

oxidation was complicated by the second-order decomposition of chlorous acid. This decomposition was corrected for by a calibration curve and an approximate formula derived from the reaction kinetics. Use of either of these corrections gave experimental values for glucose within a few per cent of the theoretical value. Melibiose, maltose, and lactose were oxidized at about the same rate as glucose and cellobiose. Nonreducing sugars and sugar acids were not appreciably oxidized under the experimental conditions used. 8 tables, 9 diagrams, and 29 references. E.S.

SULFATE MILLS

ANON. "Grouping" makes for easier operation in new Weyerhaeuser Everett mill. Pulp & Paper 28, no. 1: 58-62, 65-7, 70, 73-4 (January, 1954); *cf.* B.I.P.C. 24: 401.

A detailed description of the Everett, Wash. bleached sulfate mill of the Weyerhaeuser Timber Co. similar to that in the previous reference is presented. 24 illustrations and 1 map. R.A.S.

SULFITE LIQUOR

ANDERS, HEINZ. Problems in the preparation of strong cooking acids. Wochbl. Papierfabrik. 81, no. 17: 639-42 (Sept. 15, 1953). [In German]

The author discusses the relationship between total sulfur dioxide, temperature, and necessary pressure for cooking acid (about 7-10% total sulfur dioxide). In a system utilizing the gas-off and liquor return for strengthening the tower acid, many effects determine the final acid strength. These are discussed with particular reference to the sulfite pulping of wet-hogged chips. The effect of these factors upon sulfur consumption is also considered. 4 tables and 3 figures. R.W.H.

SULFITE MILLS

ALFTHAN, HARRY. Jakobstads Cellulosa AB—Pietarsaaren Selluloosa Oy. Paper and Timber (Finland) 35, no. 4: 205-7; no. 6: 265-6, 268; no. 12: 495-500 (April, June, December, 1953). [In Swedish; English summaries]

In the first part of the article the new repair shop, in the second, the new mill office, and in the third, the gradual expansion of the sulfite mill from an annual capacity of 40,000 metric tons in 1935 to the present output of 70,000 tons are described. Details of the various installations in the different departments of the sulfite mill are given. 24 illustrations. E.S.

AK. A visit to the new pulp mill of the Holzstoff- und Papierfabrik Max Egon Fürst zu Fürstenberg at Neustadt in the Black Forest. Das Papier 7, no. 23/24: 499-500 (December, 1953). [In German]

The new sulfite mill is described briefly. 3 illustrations. E.S.

ANKER-RASCH, OLE. Alaska's first pulp mill. Norsk Skogind. 7, no. 12: 442-3 (December, 1953). [In Norwegian]

A brief description of the new magnesium-base sulfite mill now under construction at Ketchikan, Alaska by the Ketchikan Pulp Co. is given. The mill will have an initial capacity of 300 tons of dissolving pulp and is expected to start operations in the middle of 1954. 1 illustration. E.S.

ANON. Rayonier's Jesup, Georgia pulp plants to be in operation in early spring. Southern Pulp Paper Mfr. 17, no. 1: 40, 42 (January, 1954); Paper Ind. 35, no. 11: 1193-4 (February, 1954); *cf.* B.I.P.C. 24: 143.

Essentially the same information as in the previous reference is given. 8 illustrations in the first reference and 6 in the second. E.S.

SULFITE PROCESS

OGAIT, ALFRED. Yield problems in the manufacture of sulfite pulps. Das Papier 7, no. 23/24: 471-8 (December, 1953). [In German; English and French summaries]

The determination of pulp yields (I) of individual cooks is usually not possible, because either the necessary weighing equipment is lacking or the pulps from different cooks are not treated separately but as a mixture in the stock-preparation treatment. However, the accurate knowledge of (I) is essential if the effect of certain cooking modifications, for instance for increasing (I), must be evaluated. A criterion for unbleached spruce sulfite pulps in direct relationship to (I) (theoretically lignin-free or bleached) was sought, which would permit the indirect determination of (I). The existence of such a relationship between (I) and the D.P. has been established; it holds for D.P.'s above 600, is largely independent of cooking conditions, and permits the determination of (I) with a maximum error of ±1% of the wood weight. Since the percentage of readily hydrolyzable polysaccharides in spruce varies to a certain extent, the variations in wood quality must be considered. This fact also explains why sprucewoods of different origin cooked under identical conditions to identical cooking degrees may give different (I). The highest D.P. obtainable with sprucewood in commercial sulfite pulping amounts to approximately 1800 with a maximum (theoretically lignin-free) (I) of about 52-53% (which may show slight variations on account of the above-mentioned reasons). The lowest commercial (I) are obtained in the digestion of dissolving pulps which, from quality reasons, must be cooked to D.P.'s as low as 800-900; the corresponding (I) amount to about 44-45%. Compared with the maximum yield of 53%, this signifies a loss of 8-9% of the wood weight or 16-18% of the pulp weight which the dissolving-pulp industry must bear to satisfy the high-quality demands of its customers. The agreement of the author's data with those of other investigators (Wultsch, Hägglund) is pointed out. In conclusion, several examples of the practical application of the D.P. method are given. 3 tables, 6 figures, and 10 references. E.S.

PAPER-MAKER (LONDON). Knowledge and its enlargement. No. 1. Sulphite pulping—an exposé. Paper-Maker (London) 126, no. 5: 336-43 (November, 1953).

This is the first in a series of educational articles for British senior students in papermaking and deals with the different stages of the sulfite process, including a discussion of pulping variables and pitch problems. In a second part slime control by chemicals and their application are described. 2 tables and 11 figures. E.S.

SULFITE PROCESS—AMMONIA BASE

HELLEUR, D. E. Classification of ammonia-base pulping literature. Tappi 37, no. 1: 177-82A (January, 1954).

A comprehensive condensed classification of the ammonia-base pulping literature (1900 to June, 1953) is presented. Articles and patents are classified from various points of view, in the interests of both the mill and the laboratory. 132 references. E.S.

SULFITE PROCESS—BIBLIOGRAPHY

POTTER, G. J. C. A review of the literature on the sulphite process from September, 1951 to August, 1952. Proc. Tech. Sect., Can. Pulp Paper Assoc. 39: 373-7 (1953); *cf.* B.I.P.C. 23: 441.

Continuing previous compilations, the literature on the sulfite process for the indicated period is reviewed under the following headings: wood quality; sulfur economy; acid making; cooking liquor; and digester equipment and control, circulation, etc. 41 references. E.S.

SULFITE PROCESS—SODIUM BASE (ACID)

BICKELL, L. K., and TRETHEWEY, G. D. A recovery method for sodium base sulphite liquor. Pulp Paper Mag. Can. 54, no. 13: 110-16 (December, 1953); Proc. Tech. Sect., Can. Pulp Paper Assoc. 39: 384-90 (1953); Paper Mill News 74, no. 12: 71-2 (March 24, 1951). [Abridgment]

A complete cyclic process is described whereby the sodium in the smelt, obtained from burning concentrated sodium-base sulfite waste liquor, is recovered by means of a synthetic resin ion-exchange material capable of removing sodium from the smelt solution, and also capable of being regenerated by means of sulfurous acid to form fresh soda-base sulfite acid. Sulfur is recovered from the sodium sulfide portion of the smelt by the ion-exchange method and by an auxiliary chemical method, in the form of hydrogen sulfide, which is burned to sulfur dioxide and absorbed in water to form sulfurous acid, used to strip the sodium from the ion-exchange material. The process provides a means by which sodium-base sulfite acid can be used economically to give chemical recovery, heat recovery, increased yield, and elimination of stream pollution. 2 tables and 2 flowsheets in the first and second references and 1 flowsheet in the third. E.S.

SURFACE PHENOMENA

HARRIS, B. L. Adsorption. Ind. Eng. Chem. 46, no. 1: 64-71 (January, 1954); *cf.* B.I.P.C. 23: 442.

A review of the work done during the past year in the field of industrial applications of adsorption is presented. The interest in the use of adsorptive means of resolving gases or liquids in quantity has continued. Sections are included on industrial applications, surface area and porosity studies, chromatography, liquid-phase adsorption, chemisorption, preparation and properties of various adsorbents, and thermochemistry of adsorption. 351 references. R.A.S.

TARIFF

TINKER, E. W. Tariff statement. Southern Pulp Paper Mfr. 17, no. 1: 96 (January, 1954).

The statement issued by the American Paper and Pulp Association, representing the views of the paper and pulp industry in the United States to the Commission on Foreign Economic Policy, is reprinted. R.A.S.

TESTING, GENERAL

LHOMME, H. Physical and mechanical experiments. Papeterie 75, no. 10: 673, 675 (October, 1953). [In French]

To obtain reproducible and dependable results in testing, the author empha-

sizes the need for the strict observance of the rules and directions supplied with different instruments (including standard humidity and temperature conditions), the careful maintenance of the (frequently delicate) testing apparatus, and the performance of a sufficient number of tests. E.S.

WATER AND WATER TREATMENT

GREVEMEYER, MAX. Underground water through wells. Wochbl. Papierfabrik. 81, no. 20: 749 (Oct. 31, 1953). [In German]

A brief resume of the implications of the Prussian water laws concerning the use of well water for industrial purposes is given. E.S.

SHERIDAN, J. R. Near man-less water treating plant. Pulp & Paper 28, no. 1: 74-5, 77 (January, 1954); *cf.* B.I.P.C. 24: 122.

The new water-treatment plant at the Weyerhaeuser bleached sulfate mill at Everett, Wash. employs the conventional water treatment with alum and lime with certain modifications in the layout, notably two circular settling basins with coagulating chambers located in the center. The plant has a nominal capacity of 27.5 million gal./day, with an emergency maximum of 36 million gal./day. Only one man is in attendance in an eight-hour shift; the rest of the time the plant is unattended. Two systems are in use for handling the effluent from the mill. Sweet-water sewers carry the drainage from the turbine-room floor and excess water from the filter plant and the outside area into the Snohomish River; all other waste is discharged to the contaminated sewer line of patented wood-stave pipe which carries it a considerable distance out in the river. 3 figures. R.A.S.

WELDING

BRETT, C. W. Maintenance by modern welding methods. Paper-Maker (London) 126, Annual Review no.: 69-71 (1953).

Examples of welding applications to pulp and paper mill machinery are given to show the usefulness of the process; a brief reference is also made to the possibilities of metal spraying. 1 illustration. E.S.

WET STRENGTH

AMERICAN CYANAMID COMPANY. The story behind Melostrength resin treated paper. Southern Pulp Paper Mfr. 17, no. 1: 98, 100, 128 (January, 1954); *cf.* B.I.P.C. 23: 922.

Following a brief outline of the promotional program of Melostrength (melamine-treated, wet-strength) paper, the possibilities of its effective use in papermaking and present and new applications are described. Data on the effect of melamine resin on the physical properties of representative commercial papers are given in tabular form. 2 tables. E.S.

MOSER, VINCENT J. A nonstatistical approach to improving wet-strength resin evaluations. Tappi 36, no. 12: 160-1A (December, 1953).

Relative efficiencies of wet-strength resins are usually compared by measuring the wet tensile strengths of test handsheets at several concentrations of the resins in the sheets. The comparisons are simplified if the wet tensile strength is plotted against the logarithm of the percentage of resin addition. Greater separation of the efficiencies of the resins can be obtained by testing with pulps beaten to low freeness, for an increment of resin addition produces

a larger increase in wet strength than the use of less highly beaten pulps. 2 diagrams and 2 references. R.K.E.

WOOD—CHEMISTRY

GREGORY, A. S., and ESTERER, A. K. Commercial potentialities of chemical utilization of wood. J. Forest Products Research Soc. 3, no. 5: 85-9; discussion: 89 (December, 1953).

The authors review the various types of processes used in the chemical utilization of wood, extraction, fractionation, and cleavage, and list the products derived in each process. The value of chemicals derived is compared with the relative value of lumber and fiberboards on a per-ton basis. Five requirements (low-cost raw material, integration of chemical processes which must be simple and reliable, high utility of resulting products, and suitability for large-volume markets) for the chemical utilization of wood on a sound economic basis are listed. 6 figures and 6 references. R.A.S.

WOOD—EXTRACTIVES

KING, F. E. The chemistry of wood extractives. Chemistry & Industry no. 50: 1325-8 (Dec. 12, 1953).

A review of recent investigations on softwood and hardwood extractives is presented. 27 references. E.S.

KING, F. E., and BOTTOMLEY, W. The isolation from *Acacia melanoxylon* of a flavan-3: 4-diol and its possible bearing on the constitution of phlobatannins. Chemistry & Industry no. 51: 1368 (Dec. 19, 1953).

Melacacidin, 3,4,7,8,3',4'-hexahydroxyflavan, was obtained from Australian blackwood, *Acacia melanoxylon*, by prolonged ether extraction. The substance when heated with aqueous mineral acids forms a deep crimson solution, from which a dark reddish-brown solid precipitates. This is the first time that a flavan-3,4-diol has been obtained from natural sources, and the authors suggest that it may provide a clue to the structure of tannin precursors. 6 references. M.A.B.

WOOD—STRUCTURE

FREY-WYSSLING, ALBERT, and BOSSHARD, HANS HEINRICH. The fine structure of the closing membrane in bordered pits. Holz Roh- u. Werkstoff 11, no. 11: 417-20 (November, 1953). [In German]

Ultra-thin sections of bordered pits cut from two-year old twigs of spruce and fir show the closing membrane to be a fine network of microfibrils. The torus possesses a texture of parallel-arranged, circular-oriented cellulose microfibrils. 9 figures and 9 references. I.H.I.

WOOD TRANSPORTATION

ACME STEEL COMPANY, *Chicago*. Bundled logs are easier to raft. Paper Ind. 35, no. 10: 1139 (January, 1954).

The advantages resulting from the bundling of logs with steel strapping include an easier and safer job for the lumberjack, easier navigation, lower losses, and frequently lower insurance rates. The steel-strapping operation of one logging firm is depicted in four illustrations. E.S.

WOOD WASTE

MATSON, E. E. Potential raw material supply for wood fiber products. J. Forest Products Research Soc. 3, no. 5: 142-5; discussion: 145 (December, 1953).

The potential raw-material supply suitable for wood-fiber products is discussed. Fiber products can be manufactured from residual wood developed at manufacturing plants and from material left in the woods after logging. Recently the amount of residual wood used in the manufacture of pulp and fiberboard has increased notably; however, the volume still available justifies a greatly expanded wood-fiber industry. 3 tables and 5 references. E.S.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record, *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents are abstracted from the complete specifications.

ADHESIVES

WYSTRACH, VERNON P. Isocyanates and products prepared therefrom and methods of making the same. U. S. patent 2,647,884. Filed March 31, 1950. Issued Aug. 4, 1953. 28 claims. Assigned to American Cyanamid Company. [Cl. 260-47]

Allyloxyphenyl isocyanates and their polymers, copolymers, or products of reaction with a compound containing a hydrogen atom reactive with the isocyanate grouping are claimed. The products are useful in treating paper, fabrics, and the like to form laminates under heat and pressure or they may be used as a binder with wood flour, etc. in the manufacture of molded articles. W.B.W.

ALKALINE PROCESSES—RECOVERY

ELY, FREDERIC G., and ROGERS, CHARLES E. Apparatus for the recovery of heat and chemicals from furnace gases and a method of operating the same. Canadian patent 498,387. Filed Oct. 12, 1943. Issued Dec. 15, 1953. 3 claims. Assigned to Babcock-Wilcox and Goldie-McCulloch, Limited.

A spray tower for the recovery of heat and chemicals from the waste gases of a recovery furnace is claimed. Intimate contact between the downflowing liquor and upflowing gases is established in the evaporating section while both liquor and gas pass in a downflow manner through the chemical recovery or separation section. This is the same as U. S. patent 2,463,757 (March 8, 1949); *cf.* B.I.P.C. 19: 595-6. 9 figures. W.B.W.

GAGLIARDI, EMILIO A. J., MELLOR, CHARLES, and HAMM, ALEXANDER L. Waste liquor recovery system. Canadian patent 498,527. Filed June 25, 1947. Issued Dec. 15, 1953. 5 claims. Hamm's interest assigned to Combustion Engineering-Superheater Inc.

A low-ash, sulfur-containing pulverized coke is mixed with black liquor prior to introduction into the recovery furnace. The coke compensates for the soap removed from the liquor and contributes to the sulfur content of the smelt. This corresponds to U. S. patent 2,495,248 (Jan. 24, 1950); *cf.* B.I.P.C. 20: 440. 1 figure. W.B.W.

ANTI-STICKS

SRERE, ALFRED A. Liner coating composition. Canadian patent 498,018. Filed Nov. 18, 1946. Issued Dec. 1, 1953. 2 claims.

A composition for lining paper bags, paperboard cartons, etc. to prevent adhesion of synthetic rubber or like material to the package is made by mixing fine talc, kaolin, protein, caustic soda, plasticizer, and water and applying this material as a coating before forming the container. This is the same as U. S. patent 2,413,007 (Dec. 24, 1946). W.B.W.

ASBESTOS

BARBARAS, GLEN D. Aqueous asbestos dispersion and process for producing same. U. S. patent 2,661,287. Filed Nov. 15, 1949. Issued Dec. 1, 1953. 15 claims. Assigned to E. I. du Pont de Nemours & Company. [Cl. 92-1]

The dispersion of chrysotile asbestos into individual fibers is accomplished by first mechanically reducing the material, then defibering in a high-speed mixer or ball mill in the presence of a dissolved metal salt with a monovalent anion and a cation containing a polyvalent metal (e.g., aluminum chloride, zirconyl acetate, etc.). W.B.W.

BARBARAS, GLEN D. Forming asbestos products from polyvalent ion dispersed asbestos. U. S. patent 2,661,288. Filed Nov. 15, 1949. Issued Dec. 1, 1953. 4 claims. Assigned to E. I. du Pont de Nemours & Company. [Cl. 92-21]

This is in part a continuation of U. S. patent 2,661,287 (Dec. 1, 1953; *cf.* abstract above) and covers sheets and other products formed from the dispersed fibers and a hydrous metal oxide such as aluminum hydroxide. W.B.W.

BARKERS AND BARKING

BURTON, ROBERT E. Bark peeler having pivoted jaws spread by fluid pressure. U. S. patent 2,661,782. Filed April 1, 1952. Issued Dec. 8, 1953. 3 claims. [Cl. 144-208]

Flat, pivoted, scissor-type jaws can be spread apart by fluid pressure applied to a piston controlled by the operator. The closed jaws are driven between the log and the bark, the piston is energized, and the jaws forced apart to separate the bark from the log. 4 figures. W.B.W.

SIMONS, HOWARD A. Hydraulic barking or cleaning apparatus. U. S. patent 2,661,781. Filed April 4, 1949. Issued Dec. 8, 1953. 11 claims. [Cl. 144-208]

Rotary heads each carrying at least one nozzle are rotated in a plane parallel to the direction of log travel, and the log is revolved as it passes through the machine on a conveyor. The jets strike the log at all angles to insure the removal of bark, dirt, and other foreign material. 3 figures. W.B.W.

BLEACHING

McEWEN, ROBERT L., SHELDON, FRED R., and SCHROEDER, WILLARD F. Method of superbleaching chemical pulp. U. S. patent 2,661,261. Filed June 30, 1950. Issued Dec. 1, 1953. 2 claims. Assigned to Buffalo Electro-Chemical Company. [Cl. 8-106]

Kraft or sulfite pulps which have been prebleached by use of hypochlorite are superbleached to a brightness in the range of 80-90 without sacrifice of strength by the use of alkaline hydrogen peroxide. Temperatures are held below 54°C. with consistency in the order of 30% based on ovendry fiber, and the time of bleaching varies, depending on pulp and other conditions, from 1 to 20 days. (This is known as the Becco "cold steep" process.) W.B.W.

BLEACHING—GROUNDWOOD

McEWEN, ROBERT L. Method of bleaching high density pulp. Canadian patent 498,775. Filed May 6, 1950. Issued Dec. 29, 1953. 6 claims. Assigned to Buffalo Electro-Chemical Company, Inc.

Wet lap groundwood at 18-35% consistency is wetted with alkaline peroxide bleach liquor, the lap disintegrated, and bleaching performed in this condition. This is identical with U. S. patent 2,513,344 (July 4, 1950); *cf.* B.I.P.C. 20: 917. 1 figure. W.B.W.

BOARD SPECIALTIES

ARNESON, EDWIN L. Article carrier. U. S. patent 2,661,140. Filed Aug. 4, 1951. Issued Dec. 1, 1953. 6 claims. Assigned to Morris Paper Mills. [Cl. 229-28]

This bottle carrier is made from a one-piece blank of lightweight paperboard; it may be shipped and stored in the flattened condition. 8 figures. W.B.W.

BOLDING, HUBERT V., and GOWENS, ERNEST G. Cube-supporting panel. U. S. patent 2,663,419. Filed April 10, 1952. Issued Dec. 22, 1953. 2 claims. Assigned to The Bradley & Gilbert Company. [Cl. 206-79]

A cardboard panel for supporting objects of a cubical form has openings cut in a hexagonal shape with a notch in the center of one side. 6 figures. R.A.S.

BUTTERY, KENNETH T. Collapsible partitioned carton. U. S. patent 2,662,683. Filed Oct. 13, 1952. Issued Dec. 15, 1953. 7 claims. Assigned to Sutherland Paper Company. [Cl. 229-28]

A bottle carrier is made from two blanks; the blank which forms the outer portion of the carrier uses heavier board than the blank which forms the medial partition separating the two rows of cells and contains the die-cut handle. 6 figures. R.A.S.

CHAMPLIN, CHARLES L., ELLSWORTH, RANSOM C., and HICKIN, ROBERT J. Carrier carton. U. S. patent 2,664,235. Filed Dec. 11, 1951. Issued Dec. 29, 1953. 5 claims. Assigned to The Ohio Boxboard Company. [Cl. 229-28]

A bottle carrier which may be shipped to the user in flattened condition and erected and filled by automatic machinery is claimed. 12 figures. W.B.W.

GEISLER, WILLIAM. Bottle tray. U. S. patent 2,663,486. Filed Aug. 17, 1949. Issued Dec. 22, 1953. 2 claims. Assigned to Wilbro Corporation. [Cl. 229-32]

A collapsible carrier tray for bottles and the like, cut and scored from a single sheet of paperboard, comprises a tray, reinforced with strips of rubber or plastic material, and strips forming the divisions between the bottles stapled to the sides of the tray. 7 figures. R.A.S.

KING, GLENGARRY D. Bag and handle. U. S. patent 2,661,892. Filed March 27, 1950. Issued Dec. 8, 1953. 3 claims. Assigned to Crown Zellerbach Corporation. [Cl. 229-54]

A handle of heavy cardboard is secured to a bellows-type paper bag near the upper edge in an inverted position; when the end of the bag is folded over and closed by stapling or the like, the handle is in an upright position and firmly attached to the bag. 4 figures. R.A.S.

LEVKOFF, DAVID. Carton blank. U. S. patent 2,664,236. Filed Aug. 17, 1949. Issued Dec. 29, 1953. 1 claim. [Cl. 229-31]

A tray-type carton is constructed, preferably from a single piece of cardboard stock, with reinforcing end panels, tongue portions, and retaining flaps which are adhesively sealed and provide extra strength at essential points. 8 figures. R.A.S.

ROBINS, LEONARD J. Carton structure. U. S. patent 2,662,684. Filed Jan. 26, 1950. Issued Dec. 15, 1953. 3 claims. Assigned to Add-A-Handle Corporation. [Cl. 229-52]

A handle which may be extended from one side of a container is outlined by fracture lines in the fiberboard, cardboard, pasteboard, etc. blank from which the container is formed. 6 figures. R.A.S.

CELLULOSE—DERIVATIVES

CHARLES, FRANK R., and WAYMAN, MORRIS. Manufacture of cellulose. Canadian patent 498,054. Filed April 8, 1950. Issued Dec. 1, 1953. 12 claims. Assigned to Canadian International Paper Company.

Cellulose from either wood pulps or cotton for conversion into derivatives exhibits improved processing characteristics when the purified pulp is treated with one or more of the group of polyoxyethylene esters of abietic acid and hydroabietic acid. An aqueous solution of the esters (0.01-0.02% based on the ovendry pulp) may be applied to the pulp sheet by spraying or by means of rolls. Among the advantages claimed are: less power required for shredding, better filtering properties, more uniform absorption of carbon disulfide, less spinneret incrustation, etc.; *cf.* also B.I.P.C. 24: 517. W.B.W.

DOWNING, JOHN, and DREWITT, JAMES G. N. Converting fibrous cellulose into an easily powderable form. U. S. patent 2,663,907. Filed Jan. 14, 1950. Issued Dec. 29, 1953. 7 claims. Assigned to British Celanese Limited. [Cl. 18-48]

Cellulose in powdered or flake form, suitable for conversion into esters or ethers is produced by passing a purified cellulose sheet between rolls heated to less than 150°C. and a nip clearance less than 0.05 inch so that the cellu-

lose is heated but not charred. After treatment between the rolls, the cellulose may be reduced to powder or flakes by passing through a hammer mill or similar means. W.B.W.

CHLORINE DIOXIDE

KESTING, EDELBERT E. Continuous method and apparatus for the production of chlorine dioxide. U. S. patent 2,664,341. Filed Jan. 9, 1952. Issued Dec. 29, 1953. 3 claims. [Cl. 23-152] *cf.* B.I.P.C. 23: 13.

A series of vessels are arranged in cascade-fashion so that the overflow of hydrochloric acid and chlorate solutions introduced into the topmost vessel flows by gravity to the next lower vessel in the series. Inert gas such as air or nitrogen is used as a diluent for the chlorine dioxide and flows countercurrent to the flow of the liquids. This diluent gas is heated before introduction into the lowest vessel (where additional chlorine dioxide is released on account of the heat) and flows upward to the next vessel where it enters at the bottom of the solution and again heats the solution and releases chlorine dioxide, etc. In operation the system reaches equilibrium with the fresh acid-chlorate solution at 25°C. and the spent solution in the lowest vessel at a temperature of 103°. 2 figures. W.B.W.

DIGESTERS

MESSING, HJALMAR S. Rotary feeding device. U. S. patent 2,652,935. Filed April 21, 1949. Issued Sept. 22, 1953. 7 claims. Assigned to American Defibrator Inc. [Cl. 214-17]

A plug-type rotor contains pockets in opposite sides so that one pocket is open to the charging hopper where it is filled with chips and the desired quantity of chemical. The plug is then rotated 180° to empty this pocket into the pretreatment chamber while the opposed pocket is receiving its charge. Suitable seals are employed to prevent loss of pressure from the pretreatment chamber around the plug rotor. 10 figures. W.B.W.

MESSING, HJALMAR S. Screw conveyer and the like having interrupted flights. U. S. patent 2,663,405. Filed Aug. 16, 1951. Issued Dec. 22, 1953. 3 claims. Assigned to American Defibrator Inc. [Cl. 198-213]

The horizontal pretreatment chamber for a Defibrator contains a rotating shaft upon which are mounted a series of interrupted flight screws. Discontinuous flights of unequal diameter are claimed to prevent clogging and result in a more uniform distribution of material within the chamber. 3 figures. W.B.W.

MUENCH, CARL G. Fiber preparation device. U. S. patent 2,662,821. Filed May 3, 1949. Issued Dec. 15, 1953. 2 claims. Assigned to The Celotex Corporation. [Cl. 92-7]

A digester for processing the raw material with just sufficient liquid to moisten the fiber contains a series of shelves and rotating sweep arms which move the material around the shelf until it falls through an opening to the next lower shelf, thus avoiding mechanical action on the fiber during cooking. At the end of the digestion period the fiber falls from the last shelf and is diluted to flowable pulp by water jets in the bottom of the digester. 3 figures. W.B.W.

DISPENSING CONTAINERS

LEONARD, GORDON. Container. U. S. patent 2,661,138. Filed March 16, 1949. Issued Dec. 1, 1953. 2 claims. [Cl. 229-17]

A paperboard milk carton comprises a circular base and tapers upward with a slight flare to a square top, so that the containers may be nested prior to use. A wide overlap is provided at the top of the container to form a pour opening protected by a cover flap adhesively secured at the edges. 9 figures. W.B.W.

REID, GEORGE C., and JACOBS, SAMUEL S. Container. U. S. patent 2,661,137. Filed June 8, 1949. Issued Dec. 1, 1953. 4 claims. Assigned to American Can Company. [Cl. 229-7]

A paperboard milk carton with a flat top is sealed with two flaps. The inner flap contains a plug element to seal the pour opening and the outer flap seals the top area over the pour opening to protect it from dirt, etc. This is a continuation of U. S. patent 2,085,979 (July 6, 1937) by John M. Hothersall. 3 figures. W.B.W.

SANFORD, ROY S. Paper container. U. S. patent 2,663,981. Filed July 31, 1950. Issued Dec. 29, 1953. 9 claims. [Cl. 53-5]

The application is a division of U. S. patent 2,664,237 (Dec. 29, 1953; *cf.* abstract below) and claims the method of forming, coating, filling, and sealing the end of a tubular container of the paper milk carton type. 7 figures. R.A.S.

SANFORD, ROY S. Paper container. U. S. patent 2,664,237. Filed Nov. 4, 1947. Issued Dec. 29, 1953. 9 claims. Assigned 50% to Ex-Cell-O Corporation and 50% to Ace C. Fessenden and Ace Carton Corporation. [Cl. 229-37]

A paper milk carton has a closure consisting of a flap hinged to one wall of the carton, adhesively secured to the three remaining walls, and folded in the center to facilitate opening. 7 figures. R.A.S.

DYES AND DYEING

APPLETON, HENRY B., and KIEHL, PETER F. Method for improving the brightness of textile materials and product. U. S. patent 2,661,305. Filed Nov. 1, 1949. Issued Dec. 1, 1953. 12 claims. Assigned to L. B. Holliday & Company, Limited. [Cl. 117-33.5]

A fluorescent brightening agent for natural or synthetic fibers is composed of a substituted dihydrocollidine such as 2,4,6-trimethyl 1,4-dihydro pyridine dicarboxylic acid diethyl ester. W.B.W.

HEIN, DELTON W. Chlorine-fast fluorescent optical bleaches. Canadian patent 496,440. Filed Dec. 2, 1952. Issued Sept. 29, 1953. 4 claims. Assigned to American Cyanamid Company.

An optical brightening agent claimed to be resistant to the action of hypochlorite is made by reacting 4,4'-diaminostilbene-2,2'-disulfonic acid with cyanuric chloride in acetone solution, adding *p*-chloraniline, and heating until the condensation is complete. Monoethanolamine is then added and the acetone removed by distillation and replaced by an equal amount of water

from which, after cooling, the product is isolated by filtration as the sodium salt with an excellent yield. W.B.W.

HEIN, DELTON W., and LANE, WYVONA A. Fluorescent brighteners. Canadian patent 496,265. Filed Sept. 27, 1951. Issued Sept. 22, 1953. 7 claims. Assigned to American Cyanamid Company.

An example of a new series of acylated halogen-stilbene compounds claimed as fluorescent brighteners is given as follows: A mixture of 2,4-dimethoxybenzoic acid and thionyl chloride is reacted to produce 2,4-dimethoxybenzoyl chloride which is added to 5,5′-dichloro-4,4′-diaminostilbene-2,2′-disulfonic acid in pyridine. The mixture is refluxed until acylation is complete to produce a pale yellow solid with excellent resistance to hypochlorite. W.B.W.

LANE, WYVONA A., and HEIN, DELTON W. Dichlorodiaminostilbenedisulfonic acids. Canadian patent 496,266. Filed Sept. 27, 1951. Issued Sept. 22, 1953. 8 claims. Assigned to American Cyanamid Company.

The optical brightening agents claimed in this patent can be prepared by reacting a nitrochlorotoluene with an alkali hypochlorite to form a dinitrodichlorostilbene such as 6,6′-dichloro-4,4′-dinitrostilbene-2,2′-disulfonic acid. This is one example of a new class of stilbene derivates covered by this patent. W.B.W.

SAVIDGE, LESLIE N., and THOMAS, RICHARD. Fluorescent alkoxy benzoyl derivatives of 4,4′diamino stilbene-2,2′disulfonic acid and detergent compositions containing same. U. S. patent 2,643,197. Filed March 30, 1948. Issued June 23, 1953. 20 claims. Assigned to Lever Brothers Company. [Cl. 117-33.5]

This is similar to U. S. patent 2,643,198 (June 23, 1953); *cf.* abstract below. W.B.W.

SAVIDGE, LESLIE N., and THOMAS, RICHARD. Fluorescent compound and methods of imparting fluorescent effects to materials. U. S. patent 2,643,198. Filed Aug. 13, 1949. Issued June 23, 1953. 16 claims. Assigned to Lever Brothers Company. [Cl. 117-33.5]

A blue-fluorescing optical brightening agent for textiles or paper which is substantive to cellulose fibers may be prepared by reacting 4,4′-diaminostilbene-2,2′-disulfonic acid under alkaline conditions with an acyl chloride such as 3,4,5-trimethoxybenzoyl chloride in pyridine. W.B.W.

EVAPORATION AND EVAPORATORS—SULFITE WASTE LIQUOR

LOCKMAN, CARL J. Heat-treating a fluent substance. U. S. patent 2,647,570. Filed Jan. 21, 1950. Issued Aug. 4, 1953. 6 claims. Assigned to Rosenblad Corporation. [Cl. 159-17]

A multiple-stage evaporator comprises heat-transmitting walls between the compartments of each stage. Material to be concentrated, particularly spent sulfite liquor, is passed through the compartment from bottom to top, while the heating fluid is passed through the adjoining compartment from top to bottom. The condensate from the evaporation process is a good solvent for the scale formed inside the compartment; consequently, this condensate is passed through a heat exchanger and reintroduced as the heating fluid in the evaporator. At intervals the flow of heating fluid in the compartments is

switched and scale deposited by the evaporated liquid is dissolved from the walls. 1 figure. W.B.W.

FOAM

CARNES, JOSEPH J. Long-chain alkylbenzenesulfonamide-ethylene oxide condensation products. U. S. patent 2,649,478. Filed June 22, 1949. Issued Aug. 18, 1953. 6 claims. Assigned to American Cyanamid Company. [Cl. 260-556]

Nonionic surface active agents are produced as condensation products of ethylene oxide with alkylbenzenesulfonamides which contain 8-18 carbon atoms. These agents are soluble in and resistant to both acids and alkali and may be used in fabric dyeing or as foaming agents in the manufacture of wallboard. 2 figures. W.B.W.

FOLDING BOXES

BOLDING, HUBERT V. Multicell collapsible carton. U. S. patent 2,662,682. Filed Nov. 9, 1951. Issued Dec. 15, 1953. 5 claims. Assigned to The Bradley & Gilbert Company. [Cl. 229-28]

The one-piece partitioned carton for bottles, light bulbs, eggs, etc. described in U. S. patent 2,574,461 (Nov. 13, 1951; *cf.* B.I.P.C. 22: 295) is modified by the addition of notched locking tongues. 11 figures. R.A.S.

BURGER, MARTIN. Egg carton. U. S. patent 2,664,233. Filed May 14, 1949. Issued Dec. 29, 1953. 19 claims. Assigned to General Package Corporation. [Cl. 229-28]

A foldable paperboard egg carton has cross partitions hingedly connected to the side, in turn provided with flaps which fit into slots in the bottom, bracing and strengthening the carton as a whole. The structure is an improvement for collapsible cellular egg cartons of the type shown in U. S. patent 1,783,397 (Dec. 2, 1930) by Troyk. 8 figures. R.A.S.

BURGER, MARTIN. Egg carton. U. S. patent 2,664,234. Filed Dec. 29, 1949. Issued Dec. 29, 1953. 21 claims. Assigned to General Package Corporation. [Cl. 229-28] Canadian patent 498,626. Filed July 16, 1950. Issued Dec. 22, 1953. 21 claims. Assigned to General Package Corporation.

These two patents are an extension of U. S. patent 2,664,233 (Dec. 29, 1953; *cf.* abstract above) and cover modifications in the position of the strengthening flaps to facilitate the use on automatic equipment. 6 figures. R.A.S.

GIBBONS, CLYDE F. Corner locking device for containers. U. S. patent 2,663,488. Filed Nov. 30, 1950. Issued Dec. 22, 1953. 3 claims. Assigned to Gaylord Container Corporation. [Cl. 229-36]

A corner lock for collapsible fiberboard containers is claimed which incorporates two adjacent walls connected by flaps which pass through suitable slots in the rear panel of the container, then fold back and are held in slotted anchoring tabs. 6 figures. R.A.S.

INMAN, WILLIAM H. Carton. U. S. patent 2,661,143. Filed July 8, 1950. Issued Dec. 1, 1953. 2 claims. Assigned to Bloomer Bros. Company. [Cl. 229-37]

A carton for ice cream and the like with interlocking end walls and a sealing flap along one edge with a tab for releasing the adhesive closure is claimed. 5 figures. W.B.W.

JOHNSON, RICHARD H. Container with carrying handle. U. S. patent 2,663,485. Filed May 2, 1951. Issued Dec. 22, 1953. 6 claims. Assigned to Container Corporation of America. [Cl. 229-16]

A container made from a single sheet of paperboard, preferably corrugated board or solid fiberboard, has an integral handle, inserted through the slotted top. The side panel opening is held closed by a tab that locks between the layers of the handle support. 10 figures. R.A.S.

MCNAIR, ROBERT A. Carton with improved opening characteristics. Canadian patent 498,627. Filed March 4, 1952. Issued Dec. 22, 1953. 2 claims. Assigned to Gerber-Ogilvie Baby Foods Limited.

Fracture lines are incorporated into the blank of the carton so that the cover is formed by separation of the top from the side panels and front along three edges, with the fourth edge acting as a hinge. A notch on one edge provides access for initiation of the fracture. 6 figures. W.B.W.

PAIGE, RICHARD E. Expansible carton and detachable cover. U. S. patent 2,663,487. Filed April 17, 1948. Issued Dec. 22, 1953. 2 claims. [Cl. 229-34]

The overlapped side walls of this carton (made from cardboard or the like) may be extended outwardly to provide more space for the enclosed merchandise. A detachable cover is held by flaps cut to fit into notches in the side walls. 10 figures. R.A.S.

ZINN, JULIUS A., JR. Laminated carton. U. S. patent 2,661,141. Filed Feb. 3, 1948. Issued Dec. 1, 1953. 3 claims. [Cl. 229-37]

A laminated carton suitable for liquids is formed from a blank with the metal-foil, waxed-paper, or plastic-film laminate adhesively secured to the cardboard backing only in selected areas not subject to folding. Damage to the lining material is claimed to be reduced by this method of construction. Laminated edges of the carton stock exposed to the contents of the package are sealed (e.g., with glyptal) to prevent penetration of liquids between the laminates and consequent carton failure. 11 figures. W.B.W.

INSECTS AND VERMIN

SOKOLIK, EDWARD. Insect electrocuting appliance. U. S. patent 2,661,566. Filed Dec. 16, 1950. Issued Dec. 8, 1953. 12 claims. [Cl. 43-112]

Conductors carrying opposed electrical charges of voltage are wound in a spiral between upper and lower girders of insulating material; they are spaced sufficiently close so that flies and other insects will contact adjacent conductors and be electrocuted by the voltage (which is sufficiently low to be safe to humans or animals) supplied from the transformer or other source. 13 figures. W.B.W.

INTERIOR PACKING

KINCAID, ELBERT B. Packing element. U. S. patent 2,663,417. Filed Aug. 24, 1950. Issued Dec. 22, 1953. 4 claims. Assigned to Container Corporation of America. [Cl. 206-62]

A packing element especially suited for fragile articles such as glass panes comprises a strip of corrugated paperboard cut and scored in such a manner that V-shaped elements are formed and held secure by additional suitably cut members or by a tongue folded over from the same strip of material. The strips are used to line the walls of a container, with the glass held in the slots between the elements. 10 figures. R.A.S.

WHITBY, LESLIE R. Insets for boxes and appliances for use therewith. Canadian patent 498,817. Filed Sept. 21, 1950. Issued Dec. 29, 1953. 4 claims. Assigned to R. H. Filmer Limited.

This manually operated device is an aid for the operator in forming a series of cells in a paperboard blank; the cells are used for the separation of fruits or eggs in packages. 11 figures. W.B.W.

LATEX, SYNTHETIC

CROUCH, WILLIE W., and COTTEN, ERNEST W. Emulsion copolymerization of sulfur dioxide and unsaturated organic compounds. U. S. patent 2,645,631. Filed Feb. 16, 1948. Issued July 14, 1953. 28 claims. Assigned to Phillips Petroleum Company. [Cl. 260-79.3]

Stable latices in emulsion form suitable for impregnation or coating of paper, cloth, and the like are produced by polymerization of a mono-olefin (butadiene, isoprene, methyl acrylate, etc.) with sulfur dioxide in the presence of an emulsifying agent (such as lauryl sodium sulfate), and a catalyst. These latices may be stored for indefinite periods and be mixed with other latices to produce a wide variety of materials. W.B.W.

MACHINERY—BEATERS

KNOLL, WILLIAM V. Beater mechanism for treating papermaking material. U. S. patent 2,661,665. Filed April 13, 1950. Issued Dec. 8, 1953. 5 claims. [Cl. 92-22]

A beater roll is claimed which eliminates the separate bars normally used and substitutes cylindrical castings with grooves milled into the surface. These castings form a solid outer roll surface and make the wood filler strips unnecessary. Spiders keyed to the shaft support the castings, and end plates complete the unit. 6 figures. W.B.W.

SERPAS, RALPH J. Pulp beater or disintegrator. U. S. patent 2,663,228. Filed March 9, 1953. Issued Dec. 22, 1953. 11 claims. [Cl. 92-22]

The conventional beater roll is replaced by an endless belt operating around a pair of rollers; the belt carries bars which co-operate with bars mounted on an adjustable bedplate. It is claimed that the pulp is subjected to more mechanical action than with a conventional beater arrangement. 10 figures. W.B.W.

MACHINERY—BOARD MACHINES

CHAPMAN, RALPH. Apparatus for forming fiber mats, including deckle boxes with white water return. U. S. patent 2,660,935. Filed Dec. 20, 1948. Issued Dec. 1, 1953. 4 claims. Assigned to Chapman Forest Utilization, Inc. [Cl. 92-54]

Fiber mats of improved uniformity are claimed for this machine which

incorporates baffles and vanes beneath the screen of the deckle box to insure a uniform smooth flow of white water introduced below the screen. These baffles prevent surging of water through the screen when white water is introduced into the bottom chamber prior to the charging of slurry into the deckle box. White water is likewise mixed with the pulp slurry in a chamber above the deckle box just prior to entrance of the slurry into the deckle box. 5 figures. W.B.W.

MACHINERY—CHESTS

GRUEN, ERNEST J. Pulp storage tank current control. U. S. patent 2,661,668. Filed March 18, 1950. Issued Dec. 8, 1953. 2 claims. Assigned to Western Electric Company, Incorporated. [Cl. 92-37]

Dead spots are eliminated in an oblong storage tank equipped with a mid-feather (I) by providing openings in (I) near the end farthest from the impellers. 3 figures. W.B.W.

MACHINERY—CHIPPERS

VAUGHAN, WILLIAM K. Wood chipper. U. S. patent 2,663,506. Filed Dec. 12, 1951. Issued Dec. 22, 1953. 5 claims. [Cl. 241-278]

The knives of this chipper are mounted in blocks fastened to the face of the chipper disk. Advantages claimed include: stronger construction for the disk, ability to mount the knives closer together for continuous engagement of the log, and better card breaking without supplemental equipment. 5 figures. W.B.W.

MACHINERY—COLLATING RACKS

SHELLMAN, NORMAN C. Paper storage and manifolding device. U. S. patent 2,664,205. Filed July 29, 1950. Issued Dec. 29, 1953. 2 claims. [Cl. 211-55]

This device for manually assembling sheets of paper or paper interleaved with carbon sheets contains a number of shelves, each offset from the one above, with the uppermost shelf containing a cut-away portion on each side to facilitate grasping the assembled pack. 8 figures. W.B.W.

MACHINERY—CONVERTING MACHINERY

BARTELT, HAROLD L. Packaging machine. Canadian patent 498,541. Filed April 19, 1951. Issued Dec. 22, 1953. 16 claims.

This corresponds to U. S. patent 2,649,674 (Aug. 25, 1953); *cf.* B.I.P.C. 24: 156. 24 figures. W.B.W.

BELCHER, DANIEL, WILLIAMS, RUSSELL J., and HEIMOS, MILTON J. Manufacture of window bags. U. S. patent 2,662,578. Filed July 7, 1949. Issued Dec. 15, 1953. 7 claims. Assigned to Bemis Bro. Bag Company. [Cl. 154-36]

Paper from two supply rolls is fed into this machine which cuts window openings into the webs; adhesive is applied around the opening of one of the webs, and a patch of window material such as cellophane is applied over the window opening of what will become the bag liner. The window openings are brought into register and bag tubing is formed and made into two-ply window bags. 16 figures. W.B.W.

FISCHER, PAUL E. Method and apparatus for making cartons for packaging of liquids. U. S. patent 2,664,034. Filed Sept. 2,

1952. Issued Dec. 29, 1953. 9 claims. Assigned to E. G. Staude Manufacturing Company, Inc. [Cl. 93-36]

A method of and machine for the manufacture of a frustoconical paper milk carton with a square base and gabled top is claimed. These cartons may be nested at the place of manufacture and shipped in this condition, thus saving space in storage and setup machinery for the user. 9 figures. W.B.W.

HARRISON, EDGAR. Manufacture of paper crackers. Canadian patent 496,372. Filed Dec. 6, 1949. Issued Sept. 22, 1953. 7 claims. Assigned to Tom Smith & Co., Ltd.

Paper cylinders for holding party favors are automatically formed and crimped at both ends by the machine claimed. This is identical with U. S. patent 2,631,417 (March 17, 1953); *cf.* B.I.P.C. 23: 601. 10 figures. W.B.W.

KELLER, HARRY. Edge trimming machine. U. S. patent 2,663,352. Filed Oct. 19, 1951. Issued Dec. 22, 1953. 10 claims. [Cl. 154-41]

Cardboard strips fed into this machine are uniformly spaced in relation to the preceding strip and the edges bound with a band of adhesive-coated paper; the bound cardboard is severed from the continuous binding tape by a knife actuated by a pressure foot. The knife actuation does not depend upon strips of uniform length. 18 figures. W.B.W.

LINCOLN, JOHN D. Machine and method for producing continuous honeycomb structures. U. S. patent 2,649,131. Filed March 27, 1948. Issued Aug. 18, 1953. 19 claims. [Cl. 154-1]

The machine produces a rigid cellular structure in continuous ribbonlike form for use as a core in building panels, doors, etc. from strips of paper by first applying transverse lines of adhesive in longitudinally spaced relation on the corresponding faces of adjacent strips. The strips are brought together and the adhesive sets while the strips are held in a thick compacted ribbon; the honeycomb structure is then expanded to its predetermined size, and suitable rigidifying material is applied and allowed to set. 4 figures. W.B.W.

LIVACICH, JOHN T., and DE GEAR, EDWARD W. Closing machine with rectangular container squaring and debulging devices. U. S. patent 2,660,936. Filed July 20, 1949. Issued Dec. 1, 1953. 5 claims. Assigned to American Can Company. [Cl. 93-55.1]

Containers of the type commonly used for frozen foods comprising a fiber body with metal ends are passed through this machine to ensure that the body of the container is square and the sides flat before the upper end closure is attached to the container. 4 figures. W.B.W.

LOESER, DONALD B. Machine for fabricating laminated signatures provided with sheet metal inserts. Canadian patent 498,484. Filed Dec. 11, 1952. Issued Dec. 15, 1953. 9 claims. Assigned to The Sorg Paper Company.

The machine claimed spaces sheet-metal inserts between adhesively joined webs of paper and cuts the laminated web. This is identical with U. S. patent 2,629,423 (Feb. 24, 1953); *cf.* B.I.P.C. 23: 601. 17 figures. W.B.W.

ROSELIUS, LOUIS W. Slitting, scoring, and folding machines. U. S. patent 2,664,035. Filed June 5, 1951. Issued Dec. 29, 1953.

5 claims. Assigned to S&S Corrugated Paper Machinery Co., Inc. [Cl. 93-49]

This machine is designed to perform a series of operations usually carried out by more than one machine. Sheets of corrugated board are removed from a stack and passed through the machine where the blank is cut, the slits made, and the blank scored and folded, whereupon it is taped or stitched and delivered from the machine as a tubular box blank. 13 figures. W.B.W.

SILLARS, GEORGE S., and HALL, WALTER B. Mechanism for creasing box blank material. Canadian patent 498,096. Filed July 21, 1949. Issued Dec. 1, 1953. 2 claims. Assigned to Hoague-Sprague Corporation.

A continuous web of box-blank material is creased by ribbed creasing rolls beveled in such a manner that the material is pinched along the sides of the crease into a notch provided between the rolls. The layers of the stock are delaminated in the process and the crease line rendered flaccid without materially weakening the board. 4 figures. W.B.W.

MACHINERY—CORRUGATING MACHINE

OSBORNE, RUSSELL E., and MOYER, STANLEY H. Corrugating machine. U. S. patent 2,663,351. Filed Oct. 23, 1951. Issued Dec. 22, 1953. 13 claims. [Cl. 154-30]

A pair of endless conveyors, each comprising a pair of spaced chains and spaced interlacing rods form the corrugating means in this machine. The angle of engagement of the rods with the web may be adjustable in the machine to permit corrugating at an angle to the direction of the web travel. The individual rods are free to rotate, thus reducing the tendency of the paper to tear, and are individually replaceable in the event of damage. 6 figures. W.B.W.

SIDEBOTHAM, MELVIN H. Machine for making printed, corrugated box blanks. U. S. patent 2,662,452. Filed Sept. 26, 1952. Issued Dec. 15, 1953. 4 claims. [Cl. 93-36]

A single-faced corrugated board is formed; the second face sheet is printed, applied to the single-faced web, and the double-faced board is passed first between heaters to set the adhesive, and next between rolls for scoring, creasing, and cutting the blanks into finished form. 5 figures. W.B.W.

MACHINERY—COUNTERS

ROSSWALL, AXEL E. Device for counting leaves or sheets in piles or packets. U. S. patent 2,663,567. Filed Aug. 25, 1951. Issued Dec. 22, 1953. 3 claims. [Cl. 271-18]

The device comprises a vacuum nozzle and a leaf-shifter actuated by an excentric. A counter of the cyclometer type works in conjunction with the shifter and the device moves up the pile as the operating arms tilt the platform, thereby engaging the platform-lifting mechanism. 3 figures. W.B.W.

MACHINERY—CUTTERS

LITTMAN, LAWRENCE. Paper cutting means with a suction applying device. U. S. patent 2,661,801. Filed Oct. 19, 1950.

Issued Dec. 8, 1953. 11 claims. Assigned to Advance Holding Corporation. [Cl. 164-61]

A device for slitting a paper web as it travels through the printing press utilizes a slitting wheel (driven by an air or electrical motor) mounted just to the rear of a suction box which holds the paper in engagement with the slitting wheel without appreciable drag on the web. 4 figures. W.B.W.

VAZIEUX, CHARLES R., and PROUTEAU, LUCIEN H. Rotary cutting tool for the fragmentation of wood and other fibrous substances. Canadian patent 498,101. Filed June 28, 1947. Issued Dec. 1, 1953. 12 claims. Assigned to La Société Commergnat-Guilliet et Cie.

This cutting tool reduces wood or other vegetable substances to fragments suitable for the manufacture of agglomerates by means of milled cutting teeth in the perimeter of the cutter plate or disk. 9 figures. W.B.W.

MACHINERY—DRYERS

ENGSTROM, GUSTAV. Rotary steam drier. U. S. patent 2,648,914. Filed Feb. 12, 1952. Issued Aug. 18, 1953. 7 claims. [Cl. 34-124]

The heads of this drier drum are conically shaped; supported inside the outer shell is a cylindrical chamber of slightly smaller size also fitted with conical ends. Steam is introduced through the hollow axis at one end of the drum and spent steam plus condensate drawn off at the other end. Baffles between the inner chamber and the outer shell assist in efficient removal of condensate from the space between the walls. 5 figures. W.B.W.

HORNBOSTEL, LLOYD. Drier drum. U. S. patent 2,651,114. Filed Nov. 30, 1949. Issued Sept. 8, 1953. 4 claims. Assigned to Beloit Iron Works. [Cl. 34-124]

This is identical with Canadian patent 495,875 (Sept. 8, 1953); *cf.* B.I.P.C. 24: 241. 6 figures. W.B.W.

PETRY, LEWIS W., and BAXTER, JOSEPH, JR. Paper machinery. U. S. patent 2,661,546. Filed June 14, 1951. Issued Dec. 8, 1953. 9 claims. Assigned to The Black-Clawson Company. [Cl. 34-124]

The flow of steam inside of a drier drum is directed adjacent to the shell and then toward the interior of the drum by a frustoconical lightweight shell inside the drier shell. The large end of the interior shell is located at the end where steam is admitted, and condensate is removed through the hollow trunion. Condensate in the chamber between the inner and outer shell is collected by scoops which pass it into the inner chamber from which it is removed by a siphon pipe. 6 figures. W.B.W.

MACHINERY—FOLDING MACHINE

CHAMBON, LOUIS J. Method and machine for interleaving and stacking sheets of paper and similar materials. U. S. patent 2,661,946. Filed Dec. 15, 1950. Issued Dec. 8, 1953. 10 claims. Assigned to Société d'Etudes de Machines Speciales Société à Responsibilité Limitée. [Cl. 270-39]

Folded sheets are fed into the recesses of intermeshing toothed rotors and retained there by suction applied to channels in the rotors during selected

portions of travel. At the intermeshing point, sheets are released by the vacuum and simultaneously fed between co-operating worms where the pack is assembled and delivered to a horizontal belt conveyor. 9 figures. W.B.W.

REYNOLDS, FRANK J. Folding and creasing device. U. S. patent 2,661,947. Filed June 1, 1950. Issued Dec. 8, 1953. 9 claims. Assigned to Johnson & Johnson. [Cl. 270-86]

A tubular wrapper for adhesive plasters made from paper or glassine is folded in preparation for sealing by passing the end of the wrapper between a grooved wheel and the co-operating creasing blade. 4 figures. W.B.W.

TEALL, OLIVER E. Interfolding apparatus. Canadian patent 498,293. Filed Feb. 10, 1951. Issued Dec. 8, 1953. 18 claims. Assigned to National Cellulose of Canada Limited.

Webs are fed in overlapped relation to form continuously interfolded sheets. This corresponds to U. S. patent 2,642,279 (June 16, 1953); *cf.* B.I.P.C. 23: 940. 14 figures. W.B.W.

MACHINERY—HEAD BOX

HORNBOSTEL, LLOYD, and BEACHLER, EDWARD D. Stock inlet. U. S. patent 2,664,033. Filed July 7, 1949. Issued Dec. 29, 1953. 13 claims. Assigned to Beloit Iron Works. [Cl. 92-44]

Baffles within a stock inlet are replaced by groups of rectifier rolls. Stock flow onto the wire is controlled by a series of rolls adjacent the opening. This corresponds to Canadian patent 487,198 (Oct. 14, 1952); *cf.* B.I.P.C. 23: 294-5. 3 figures. W.B.W.

MACHINERY—PACKAGING MACHINERY

CLARY, GEORGE H. Bag closing apparatus. Canadian patent 498,886. Filed Dec. 13, 1949. Issued Dec. 29, 1953. 9 claims. Assigned to St. Regis Paper Company.

Gusseted, open-mouth bags are carried on a vibrating conveyor (which acts to settle the contents) to a pair of endless converging belts where the bag mouth is closed. A spoked wheel with flexible elements tucks the gussets inwardly prior to the entry of the bag mouth between the belts, thus insuring a smooth closure. The bags are then ready for sealing by stitching or other means. 9 figures. W.B.W.

DORRINGTON, NEILL E., DYKER, JOHN A., and PETERSON, WILLIAM R. Bag filling machine. Canadian patent 498,129. Filed July 27, 1946. Issued Dec. 1, 1953. 13 claims. Assigned to St. Regis Paper Company.

This semiautomatic machine for filling large bags (e.g., 100-pound bags) with a weighed charge comprises two filling spouts attended by a single operator. The operator attaches the bag to the filling spout and performs the final closure operations, whereupon the bag is delivered from the machine into a chute beneath the filling station. 41 figures. W.B.W.

EDMONDS, HARVEY A. Bag opening machine. Canadian patent 498,678. Filed March 1, 1950. Issued Dec. 22, 1953. 12 claims. Assigned to Swift & Company.

A paper bag is removed from the stack by a vacuum cup and opened by finger elements; an air blast directed at the mouth of the bag ensures complete opening. The bag is held open by the fingers during the filling process. 6 figures. W.B.W.

ROSS, ALEXANDER H. Cartoning machine. U. S. patent 2,662,355. Filed Feb. 27, 1947. Issued Dec. 15, 1953. 31 claims. Assigned to Emhart Manufacturing Company. [Cl. 53-59]

A machine for erecting, filling, and closing cartons of the tuck-in-end type is claimed. Adjustments for handling cartons of various sizes are easily made and do not require the use of exchange parts. A feature of the machine is the insertion of instruction sheets, advertising matter, or the like into the carton along with the article. 91 figures. W.B.W.

SCHROEDER, ARTHUR C. Carton handling apparatus. U. S. patent 2,660,844. Filed June 24, 1948. Issued Dec. 1, 1953. 17 claims. [Cl. 53-91]

Cartons in the flattened condition are removed from a stack in the machine and advanced in a vertical position past adhesive applicators where selected flaps are coated; the cartons are erected, the bottom flaps closed, and the top flaps opened for filling; the cartons are then advanced to the filling station, filled, and the top flaps closed and sealed. 25 figures. W.B.W.

SHENIGO, MICHAEL G. Bundling machine. U. S. patent 2,662,468. Filed Oct. 5, 1951. Issued Dec. 15, 1953. 9 claims. Assigned to The Hinde & Dauch Paper Company. [Cl. 100-21]

A bundling and tying machine for assembling paperboard blanks is controlled by a one-revolution clutch which advances the conveyor one flight with each revolution and actuates the tying mechanism as the string is tightened about the bundle. 17 figures. W.B.W.

SWAFFORD, CARL R. Carton loading machine. U. S. patent 2,662,356. Filed Feb. 28, 1952. Issued Dec. 15, 1953. 11 claims. Assigned to Container Corporation of America. [Cl. 53-91]

This machine automatically erects and loads cartons of the type used for carrying cans wherein end cans are retained in the carrier by turned-back flaps that engage the chimes of the can. 18 figures. W.B.W.

VAUGHAN, THOMAS M. Fruit wrapping machine. U. S. patent 2,662,354. Filed June 24, 1949. Issued Dec. 15, 1953. 9 claims. Assigned to United Paper Company. [Cl. 53-42]

Regular-shaped fruit (e.g., oranges or grapefruit) are individually wrapped by forcing the fruit and a sheet of wrapping paper through an opening of flexible wiping blades made from leather or the like. After the fruit has passed the opening, it is engaged by a drum which turns it, thereby twisting the ends of the wrapper still engaged by the wiping blades. 17 figures. W.B.W.

VOGT, CLARENCE W. Bag assembly. U. S. patent 2,664,238. Filed Aug. 25, 1948. Issued Dec. 29, 1953. 7 claims. [Cl. 229-53]

A method is described for handling bags made from paper or thermoplastic sheet material through a filling and closing machine. Paper tapes with a thermoplastic coating are tacked, one to each side of the bag near the mouth, and these tapes carry the bag through the opening, filling, and sealing operations, after which the tapes are removed for re-use. 6 figures. W.B.W.

WAHL, EUGENE A., and BOEHL, WILHELM. Carton filling machine. Canadian patent 498,388. Filed Feb. 24, 1953. Issued Dec. 15, 1953. 23 claims. Assigned to P. Ballantine & Sons.

This machine is designed to erect and fill the same type of carton as that described in U. S. patent 2,662,356 (Dec. 15, 1953; *cf.* abstract p. 504), although the mechanics of the two machines are dissimilar. 34 figures. W.B.W.

MACHINERY—PAPER MACHINE—YANKEE TYPE

METCALFE, WILLIAM K. Paper making machine. Canadian patent 498,308. Filed Nov. 22, 1950. Issued Dec. 8, 1953. 8 claims. Assigned to J. O. Ross Engineering Corporation.

Improvements on the Yankee drier involve an increased air flow and recirculation of a part of the drying air. This corresponds to U. S. patent 2,622,343 (Dec. 23, 1952); *cf.* B.I.P.C. 23: 457. 6 figures. W.B.W.

MACHINERY—PASTING MACHINE

MINKOW, ROBERT. Machine for applying glue to sheet material. U. S. patent 2,661,716. Filed Jan. 2, 1951. Issued Dec. 8, 1953. 1 claim. [Cl. 118-262]

The rotating shafts in this machine for application of glue to paper, cardboard, and the like are mounted in such a manner that glue cannot enter the bearings. A glue-applicator roll and its associated metering roll operate within a glue reservoir which is easily removable for cleaning. 11 figures. W.B.W.

WILLIAMS, ALBERT H., and TAYLOR, EDGAR F. Machines for applying adhesive to paper and the like. Canadian patent 497,978. Filed Dec. 3, 1948. Issued Dec. 1, 1953. 5 claims.

The sheets are removed from the top of a stack by a suction-gripping device and directed to the coating roll for the application of adhesive. Peeling strips associated with the coating roll peel the sheet from the roll and cause it to curl forwardly with the adhesive side upward onto a traveling belt conveyor for transfer to the connected machinery. 6 figures. W.B.W.

MACHINERY—PULP-INSULATING MACHINE

KROGEL, CHRISTOPHER J. Wire insulating apparatus. U. S. patent 2,663,229. Filed April 5, 1949. Issued Dec. 22, 1953. 2 claims. Assigned to Western Electric Company, Incorporated. [Cl. 92-38]

Wires are insulated by imbedding in a layer of pulp, then cutting the pulp layer into ribbons with pairs of water jets. Adjustments are provided for changing the position of the water jets to center the wire within each pulp ribbon. Waste pulp between the ribbons is reclaimed. 3 figures. W.B.W.

MACHINERY—PULPERS

BAXTER, JOSEPH, JR. Paper machinery. U. S. patent 2,661,664. Filed July 21, 1951. Issued Dec. 8, 1953. 12 claims. Assigned to The Black-Clawson Company. [Cl. 92-20]

A combination pulping and screening device comprises a series of three chambers. The first contains a large roll covered with brush elements made of stiff wire bristles; the second chamber is smaller with a roll containing

similar bristle elements in a helical shape about the roll, and the third chamber contains a screw conveyor for dewatering and ejecting the reject material. The walls surrounding the brushes in the first and second chambers contain perforations through which accepted fibers pass into the outer tank. Whipping action of the wire bristles defibers the stock and throws rejected material from one chamber to the next until it is expelled from the machine. 5 figures. W.B.W.

KNOLL, WILLIAM V. Apparatus for pulping papermaking material. U. S. patent 2,661,666. Filed Feb. 1, 1949. Issued Dec. 8, 1953. 4 claims. [Cl. 92-23]

The conical bottom of a pulper is perforated for continuous removal of defibered stock. A vaned perforated impeller, shaped to match the apexial portion of the bottom, is rotated at high speed to defiber the stock and cause circulation within the tank. Deflector vanes are mounted on the portion of the tank bottom above the impeller. 3 figures. W.B.W.

SKARDAL, KARL A., and BÖRJESON, OLOV B. Apparatus for defibrating waste paper. U. S. patent 2,655,840. Filed March 22, 1950. Issued Oct. 20, 1953. 3 claims. [Cl. 92-26]

This pulper for defibering waste paper (especially broke, trimmings, etc. within the mill) comprises a circular vat with a vaned impeller horizontally mounted in the bottom wall. A narrow gap around the perimeter of the impeller disk allows defibered material to enter the pump (located directly beneath the impeller and concentrically mounted on the same shaft). This pump acts to recirculate stock within the vat or to pump accepted stock back to the paper machine for re-use. 4 figures. W.B.W.

MACHINERY—REFINERS

KNOLL, WILLIAM V. Apparatus for refining papermaking material. U. S. patent 2,661,667. Filed April 13, 1950. Issued Dec. 8, 1953. 2 claims. [Cl. 92-26]

A series of plug-type refining elements are mounted on a drive shaft with co-operating elements supported by the housing. The stationary elements are individually adjustable with respect to the rotating elements so that, as the stock progresses from one refining unit to the next, an appropriate degree of refining is done by each unit. 7 figures. W.B.W.

LAVISTE, CORNELIUS. Means for defibrating and grinding paper pulp or other fibrous material. U. S. patent 2,660,934. Filed July 16, 1948. Issued Dec. 1, 1953. 3 claims. [Cl. 92-26]

A horizontal rotating shaft has mounted around it a rotor of frustoconical shape consisting of a series of closely spaced knife bars parallel to the shaft which co-operate with stationary knife bars mounted in an outer shell. Pulp is introduced into the center of the rotor and carried outwardly by centrifugal force between the rotor and stator knives, the clearance between which may be adjusted by lateral movement of the supporting shaft. The machine is claimed to have a high refining capacity with a very low power consumption per ton of pulp. 4 figures. W.B.W.

MACHINERY—ROLLS

HORNBOSTEL, LLOYD. Antideflection roll. U. S. patent 2,648,122. Filed Aug. 4, 1950. Issued Aug. 11, 1953. 3 claims. Assigned to Beloit Iron Works. [Cl. 29-113]

The roll shell of an antideflection roll suitable for use as the bottom roll of a calender stack is supported on the shaft by means of two inflatable tires made from natural or synthetic rubber or similar elastomeric substance. A conduit is provided within the shaft for transmitting fluid pressure to the supporting elements. Reduced initial and maintenance costs are among the advantages claimed for the roll. 3 figures. W.B.W.

MACHINERY—SCREENS

HURTER, ALFRED T. Rotary drainage screen. U. S. patent 2,664,204. Filed June 8, 1950. Issued Dec. 29, 1953. 1 claim. Assigned to Stadler, Hurter & Company. [Cl. 210-199]

Water-soaked bark from the barkers is fed into this horizontal rotary screen and the free water drained off as the bark passes through the drum. Baffle plates agitate the bark for better drainage and also cause it to move toward the outlet end. 9 figures. W.B.W.

MACHINERY—SLITTERS AND WINDERS

HORNBOSTEL, LLOYD. Winder machine. U. S. patent 2,654,546. Filed June 26, 1951. Issued Oct. 6, 1953. 9 claims. Assigned to Beloit Iron Works. [Cl. 242-66]

The degree of hardness of creped-tissue rolls after rewinding is regulated by supporting a portion of the weight of the rewound roll on pistons controlled by fluid pressure, thus relieving the pressure on the winder drums. The shaft is hollow and of antideflection construction so that, as the weight of the roll increases, the shell of the shaft remains cylindrical and the center portion of the roll is wound to the same hardness as the ends. 6 figures. W.B.W.

MACHINERY—THICKENERS

JOHANSEN, ROLF J. Inclined rotary vacuum filter. U. S. patent 2,663,432. Filed May 19, 1950. Issued Dec. 22, 1953. 8 claims. Assigned to Aktiebolaget Kamyr. [Cl. 210-202]

The filter is inclined from 1 to 5° from the horizontal; either the drum alone or the drum and the associated vat may be tilted. A reduction in air space (with a consequent reduction in foaming) is claimed, as well as better drainage of the compartments within the filter drum to the discharge opening. 3 figures. W.B.W.

MACHINERY—VATS

ZESBAUGH, LAWRENCE G. Forming roll. U. S. patent 2,662,451. Filed July 21, 1950. Issued Dec. 15, 1953. 2 claims. Assigned to Minnesota and Ontario Paper Company. [Cl. 92-43]

The rim of the supporting spider wheel is slotted to minimize interference with drainage through the metal covering and the wire of the forming roll in these areas. Reabsorption of water into the board is thereby claimed to be eliminated. 6 figures. W.B.W.

MACHINERY—WEB-FEEDING MECHANISM

BAUMGARTNER, JOHN R. Web feeding mechanism for carton blank forming machine. Canadian patent 498,199. Filed Sept. 20, 1952. Issued Dec. 8, 1953. 3 claims.

A paper web fed into a creasing and cutting or blank-forming press forms a loop between the intermittently active feed rolls and the continuously

active feed rolls during the cutting operation of the press. This is the same as U. S. patent 2,616,689 (Nov. 4, 1952); *cf.* B.I.P.C. 23: 297. 8 figures. W.B.W.

MOLDED PULP ARTICLES

WAGNER, JEAN. Apparatus for automatic withdrawing of pulp articles from molds. U. S. patent 2,663,230. Filed Nov. 17, 1948. Issued Dec. 22, 1953. 2 claims. [Cl. 92-57]

A device for withdrawal of molded-pulp shapes from the forming mold comprises a countermold which engages the article and removes it from the mold by application of vacuum in the countermold or pressure in the mold or a combination of both. The countermold is then carried to a conveyor where it is inverted and the shaped article deposited on a belt for drying. 2 figures. W.B.W.

PACKAGING

CERINO, MICHAEL J. Packet. U. S. patent 2,663,412. Filed Sept. 11, 1950. Issued Dec. 22, 1953. 5 claims. Assigned to Firm Blade Razor Company, Inc. [Cl. 206-45.21]

A packet for small articles such as razor blades, needles, etc. consists of a single blank of heavy paper, cardboard, plastic, or the like with a bottom section folded upwardly and slotted to expose half of the contents to view. A top cover with a flap folds over for complete closure. 8 figures. R.A.S.

FOSTER, THOMAS W. Can and tumbler package. U. S. patent 2,663,413. Filed Aug. 29, 1950. Issued Dec. 22, 1953. 1 claim. Assigned to Container Corporation of America. [Cl. 206-45.31]

A paperboard carton of the type used for three cans wherein folded flaps engage the chimes of the two end cans is modified by cutting and folding flaps so that a dissimilar article (e.g., a tumbler) can be packaged between the two cans. 4 figures. R.A.S.

GILL, WILLIE, and NICHOLSON, SAMUEL S. Shipping package. U. S. patent 2,662,649. Filed July 27, 1951. Issued Dec. 15, 1953. 7 claims. Assigned to American Can Company. [Cl. 214-10.5]

A method for making a unitary package, especially from cylindrically shaped articles, consists of interweaving a continuous strip of material (such as strong paper) back and forth between the layers of articles, thereby tying the end elements into the package. The structure is built up on a pallet or skid. 10 figures. R.A.S.

GRISHABER, RALPH V. Package cushioning and sealing means. U. S. patent 2,661,835. Filed Oct. 29, 1948. Issued Dec. 8, 1953. 4 claims. Assigned to Paper Patents Company. [Cl. 206-46]

The package for phonograph records, etc. comprises a book-like member with hinged front and back covers provided with pads of cushioning material on the inner side and as many more cushioning pads as necessary serving as intervening pages. Creped tissue paper, spot-compressed to form the pad, is adhesively secured to a backing sheet such as kraft paper provided with adhesive on the reverse side in selected areas, so that the pad acts as a cushion and sealing means. 5 figures. R.A.S.

GRUNWALD, EDWARD. Personalized picture playing cards. U. S. patent 2,663,418. Filed Feb. 14, 1951. Issued Dec. 22, 1953. 3 claims. [Cl. 206-62]

Playing cards treated with a coating of sensitized material onto which a photograph can be transferred are protected by being adhesively secured in individual envelopes which have an opaque wall covering the sensitized coating. 7 figures. R.A.S.

HIRSCH, CLIFFORD B. Record holder. U. S. patent 2,663,416. Filed Jan. 28, 1948. Issued Dec. 22, 1953. 6 claims [Cl. 206-62]

A holder for records is composed of bottom and cover members of laminated corrugated stock or thin paperboard with a metal post centered in the base member and opposed by a sponge rubber pad fastened to the center of the cover. 15 figures. R.A.S.

ROEHM, WILLIAM A. Doily package. U. S. patent 2,663,415. Filed June 21, 1952. Issued Dec. 22, 1953. 6 claims. Assigned to Royal Lace Paper Works, Inc. [Cl. 206-57]

A packaging means for doilies consists of an individual paper tab attached to each doily at a line of weakness. The tabs are stapled to a cardboard backing, and a transparent cover sheet is permanently secured to the top and separably sealed to the other edges of the backing sheet. 8 figures. R.A.S.

STASTNY, WILLIAM, and KOSTELANCIK, PAUL. Box construction. U. S. patent 2,661,890. Filed Jan. 21, 1950. Issued Dec. 8, 1953. 1 claim. Assigned to Lanzit Corrugated Box Company. [Cl. 229-23]

A construction for a corrugated paper, cardboard, or pressboard box for large articles, such as mattresses, consists of two identical halves, each scored to define a front and a side panel, and flaps at the end of each panel. Suitable strips of adhesive material bind the complemental free edges; the diagonally scored end flaps are folded under and secured by adhesive or stitching. 5 figures. R.A.S.

VOGT, CLARENCE W. Packaging article. U. S. patent 2,664,239. Filed April 15, 1949. Issued Dec. 29, 1953. 2 claims. [Cl. 229-55]

A package especially suitable for liquids is claimed wherein a pouch of transparent sheet material such as polyethylene, vinyl resin, etc. is supported in an outer structure made from paperboard. One wall of the supporting structure is omitted to permit a view of the contents through the transparent bag. These packages may be stored in the flattened condition until needed, when the units are assembled and the completed packages filled. 15 figures. W.B.W.

PAPER—COATED

AZORLOSA, JULIAN L. Coated paper and method of producing same. U. S. patent 2,661,309. Filed Nov. 18, 1948. Issued Dec. 1, 1953. 11 claims. Assigned to Hercules Powder Company. [Cl. 117-62]

A coating color is prepared by mixing a clay or pigment in aqueous suspension with a copolymer of acrylamide and acrylic acid in water-soluble form; the preferred range for the acrylic acid is from 6 to 10%, based on the weight of the copolymer. The coating is applied to paper; wet-rub resistance is obtained by insolubilization with 1-3% of alum applied to the surface by spraying, dipping, or coating. W.B.W.

AZORLOSA, JULIAN L. Process of coating paper and product resulting therefrom. U. S. patent 2,661,308. Filed Nov. 18, 1948.

Issued Dec. 1, 1953. 11 claims. Assigned to Hercules Powder Company. [Cl. 117-62]

A hydrolyzed methyl acrylate-vinyl acetate copolymer is employed as the binder material in a coating color for paper or board; the coated web may be further treated with various metal salts (aluminum, calcium, magnesium, etc.) to insolubilize the coating composition to produce wet-rub resistance. W.B.W.

THOMAS, JOSEPH J. Mildew-resistant mineral-coated soap wrap. U. S. patent 2,662,040. Filed Aug. 17, 1949. Issued Dec. 8, 1953. 7 claims. Assigned to S. D. Warren Company. [Cl. 117-155]

Mineral-coated paper made with a styrene-butadiene adhesive and containing a protective colloid such as polyvinyl alcohol is sufficiently mildew and alkali-stain resistant to be used for packaging freshly made soap containing 30% moisture. The use of virgin fiber in the sheet is essential to avoid inclusion of mold-nutrient material in the furnish. W.B.W.

PAPER—CURLING

FRIEDRICH, VALENTINE, JR. Process and apparatus for avoiding curl in machine-made paper. U. S. patent 2,661,669. Filed Feb. 14, 1951. Issued Dec. 8, 1953. 3 claims. Assigned to The Beckett Paper Company. [Cl. 92-38]

Objectionable curling of paper, especially that used for color lithography, is eliminated by the introduction of minute quantities of water into the felt side just prior to calendering. Passing the web over a chilling roll at the same time that a moist felt engages the felt side supplies sufficient water to relax the fibers and eliminate the curl. 3 figures. W.B.W.

PAPER SPECIALTIES

BRADY, CHARLES V., and OTTINGER, AUGUST F. Packaging material and the products thereof. Canadian patent 496,452. Filed Aug. 24, 1950. Issued Sept. 29, 1953. 4 claims. Assigned to Bemis Bro. Bag Company.

Fabric bags with a paper label strip wound helically around the bag are made by first applying the adhesive-coated creped label strip, winding the fabric into a helix, and stitching the fabric into tubing. 5 figures. W.B.W.

BRUUN, OTTO J. Cup. Canadian patent 497,986. Filed May 25, 1950. Issued Dec. 1, 1953. 1 claim.

Paper or metal-foil cups with plaited side walls are stiffened at the rim to prevent deformation of the plaits by enclosing the rim in a metal channel-shaped ring. If a cover is used, the channel section may be formed as a part thereof. 3 figures. W.B.W.

DOYLE, JOSEPH C. Carbon paper pack for manifolding typewriters. U. S. patent 2,664,301. Filed June 26, 1952. Issued Dec. 29, 1953. 3 claims. Assigned to Kee Lox Manufacturing Company. [Cl. 282-1]

The cover sheet of this carbon paper pack is adhesively attached to the backing sheet and folded to fit the pack snugly to reduce its bulk. Each sheet may be easily grasped at the center of the forward edge for removal. 5 figures. W.B.W.

FLETT, LAWRENCE H. Antifungus wrapper and method of pest control. Canadian patent 498,572. Filed March 22, 1948. Issued Dec. 22, 1953. 22 claims. Assigned to Allied Chemical & Dye Corporation.

An antifungus wrapper is made by incorporating a small percentage of a lower dialkyl dichlorosuccinate as the antimycotic agent. This is identical with U. S. patent 2,480,010 (Aug. 23, 1949); *cf.* B.I.P.C. 20: 145. W.B.W.

GABER, MARTIN. Letter pad. U. S. patent 2,661,224. Filed May 24, 1950. Issued Dec. 1, 1953. 2 claims. [Cl. 282-22]

Sheets with adhesive-coated areas and, if desirable, printed information such as name, address, etc. of the sender are bound together in pad form with a record copy for filing (carbon paper is interleaved by user) between the original sheets. After finishing the letter, the sheet is detached from the pad, folded and addressed on the reverse side, and the gummed area is utilized to close the letter, thereby forming the envelope. 20 figures. W.B.W.

JAMES, RAYMOND W. Recording material. Canadian patent 498,474. Filed June 26, 1950. Issued Dec. 15, 1953. 6 claims. Assigned to Sanborn Company.

A pressure-sensitive coating suitable for marking with a stylus heated to at least 80°C. is produced by the application of a material such as ethylcellulose, polymethyl methacrylate, etc. in an acetone solution to an opaque backing of red or black paper to produce a "blushed" coating containing microscopic hollow spaces. The incorporation of a primary plasticizer with a low vapor pressure (e.g., tributyl citrate, methoxyethyl phthalate, etc.) makes the coating sensitive to pressure when heat is applied but not easily marked by pressure alone. W.B.W.

LANG, MAURICE. Battery electrode. U. S. patent 2,664,453. Filed Nov. 15, 1946. Issued Dec. 29, 1953. 1 claim. Assigned to Henry Hyman. [Cl. 136-121]

A plate-type carbon electrode is claimed in which the electrode is made by coating (or impregnating) a paper or cloth base with a mixture containing a binder material such as vinyl chloride in a suitable solvent together with carbon black or graphite particles until it becomes liquid impermeable and presents a uniform surface of carbonaceous material. 3 figures. W.B.W.

MILLER, CARL S., and CLARK, BRYCE L. Heat-sensitive copying paper. U. S. patent 2,663,654. Filed May 15, 1952. Issued Dec. 22, 1953. 7 claims. Assigned to Minnesota Mining & Manufacturing Company. [Cl. 117-36]

Ferric stearate and gallic acid or a reaction product thereof are applied as separate coatings in solvent solution to a transparent supporting member made of paper or cellophane, and the first coating is dried before the second is applied. When the above coating is subjected to heat in the range of 60-120°C., a reaction takes place to produce an opaque substance in the coating. Radiation from an infrared source or a tungsten filament lamp may likewise be employed to produce facsimiles. 5 figures. W.B.W.

MILLER, CARL S., and CLARK, BRYCE L. Heat-sensitive copying paper. U. S. patent 2,663,655. Filed May 15, 1952. Issued Dec. 22, 1953. 7 claims. Assigned to Minnesota Mining & Manufacturing Company. [Cl. 117-36]

This is similar to U. S. patent 2,663,654 (Dec. 22, 1953; *cf.* abstract above), except that the salt of a heavy metal (the sulfide of which is colored) and an alkaline earth metal sulfide are claimed as the heat-reactive materials. 5 figures. W.B.W.

MILLER, CARL S., and CLARK, BRYCE L. Heat-sensitive copying paper. U. S. patent 2,663,656. Filed May 15, 1952. Issued Dec. 22, 1953. 7 claims. Assigned to Minnesota Mining & Manufacturing Company. [Cl. 117-36]

This is similar to U. S. patent 2,663,654 (Dec. 22, 1953; *cf.* abstract above), except that a polyvalent metal compound which melts below 120°C. and the soap of a fatty acid are claimed as the heat-reactive materials. 5 figures. W.B.W.

MILLER, CARL S., and CLARK, BRYCE L. Heat-sensitive copying paper. U. S. patent 2,663,657. Filed May 15, 1952. Issued Dec. 22, 1953. 12 claims. Assigned to Minnesota Mining & Manufacturing Company. [Cl. 117-36]

This is similar to U. S. patent 2,663,654 (Dec. 22, 1953; *cf.* abstract above), except that a number of other compounds are claimed as the heat-reactive materials. 5 figures. W.B.W.

NEWSCHWANDER, WILFRID W. Corrosion inhibition with nitrobenzaldehydes. U. S. patent 2,662,808. Filed May 2, 1949. Issued Dec. 15, 1953. 9 claims. Assigned to Shell Development Company. [Cl. 21-2.5]

The use of nitrobenzaldehyde in packaging prevents corrosion of the metal parts. As little as 0.01 grams/sq. ft. applied to the wrapping paper used is claimed to be effective in preventing rust. W.B.W.

NITZSCHE, SIEGFRIED. Accelerated condensing organopolysiloxane compositions. U. S. patent 2,645,629. Filed Dec. 19, 1951. Issued July 14, 1953. 10 claims. Assigned to Dr. Alexander Wacker Gesellschaft für Elektrochemische Industrie G. m. b. H. [Cl. 260-46.5]

A composition for imparting waterproofing characteristics to paper or textiles which is resistant to washing and becomes tack-free with a relatively low curing temperature is attained by reaction of an organopolysiloxane with an ester of malonic acid or the like to accelerate the condensation of the siloxane. W.B.W.

PHINNEY, DELBERT E. Thermal coffee cup. U. S. patent 2,661,889. Filed July 20, 1948. Issued Dec. 8, 1953. 1 claim. [Cl. 229-14]

A container jacket adapted to receive a paper cup has an inner corrugated lining for insulation from hot liquids. The cup is provided with a cover cap, a portion of which may be removed along score lines to permit drinking while the remainder of the cover keeps the contents covered and heated. 4 figures. R.A.S.

SULICH, JOHN, JR., and FREDERICK, JOSEPH E. Diazotype photoprinting material. U. S. patent 2,662,013. Filed July 18, 1951.

Issued Dec. 8, 1953. 12 claims. Assigned to General Aniline & Film Corporation. [Cl. 95-8]

Noncolloidal silica and a binder of casein or a formaldehyde condensation product are applied to the paper base for diazotype reproduction in any conventional manner, then the diazo-sensitizing solution is applied to the precoated sheet and dried. Exposure to a photographic positive produces an image of increased density over the original. W.B.W.

TROJNAR, THADDEUS J. Diazotype photoprinting materials. Canadian patent 498,620. Filed March 2, 1948. Issued Dec. 22, 1953. 8 claims. Assigned to General Aniline & Film Corporation.

Powdered metal pigment is incorporated in the cellulose acetate carrier layer applied to the base sheet of paper, cardboard, cloth, or metal. The carrier layer is then treated with a solvent solution containing a light-sensitive diazo compound (such as *p*-diazo-N,N-dimethyl aniline) together with a coupling agent (e.g., resorcinol) and, after the solvent has evaporated, the sheet is exposed to light under a photographic positive and developed by exposure to gaseous ammonia. Discoloration of the image is claimed to be reduced by inclusion of the metal powder. W.B.W.

ZIMMERMAN, JEROME G. Manifolding transfer and method of making. U. S. patent 2,663,579. Filed March 17, 1948. Issued Dec. 22, 1953. 11 claims. Assigned to The Standard Register Company. [Cl. 282-28]

Manifolding sheets which produce a number of clear nonsmudging copies by transfer of a coating under pressure (e.g., typewriting) from the rear surface of the first sheet to the front surface of the second sheet are claimed. The upper side of a sized paper is coated with an emulsion composed of a volatile organic water-immiscible liquid, an emulsifying agent, and water containing a dissolved alkali metal sulfide (e.g., carbon tetrachloride, aluminum palmitate, water, and sodium sulfide). This coating is dried to a smooth firm nontacky surface. The reverse side is coated with an emulsion composed of an organic liquid as above, an emulsifying agent, and water containing a water-soluble inorganic lead salt (e.g., carbon tetrachloride, aluminum palmitate, water, and basic lead acetate). This coating is likewise dried to produce a firm smooth nontacky film and both coatings retain sufficient water to promote the chemical reaction required to produce the dark-colored sulfide compound. 2 figures. W.B.W.

ZIMMERMAN, JEROME G. Manifold sheet and process of making same. U. S. patent 2,663,653. Filed March 17, 1948. Issued Dec. 22, 1953. 8 claims. Assigned to The Standard Register Company. [Cl. 117-36]

One side of the manifold sheet claimed is coated with an emulsion containing an organic solvent, an emulsifying agent, water, and a water-soluble metal salt of lead, silver, stannous tin, or bismuth. This dry nontacky coating is transferred to the surface of the receiving sheet by impact or pressure and the image developed by exposure to dry hydrogen sulfide gas. 2 figures. W.B.W.

PAPER SPLICING

GERMAIN, LEO M. Preparation of solutions of polyvinyl alcohol-acetate. U. S. patent 2,640,816. Filed May 3, 1952. Issued June 2, 1953. 2 claims. Assigned to Shawinigan Chemicals Limited. [Cl. 260-29.6]

A water-dispersible film for splicing paper in continuous rolls is made by reacting polyvinyl acetate with methanol and water using sodium hydroxide as a catalyst. The product is diluted with glycerin and water before casting on a belt as a film about one mil thick, then dried and slit into strips 0.75 of an inch wide. W.B.W.

PHYSICAL TESTING—PAPER—GLOSS

BOWERS, KENNETH, and MASON, THOMAS E. Gloss meter. Canadian patent 498,830. Filed July 4, 1949. Issued Dec. 29, 1953. 2 claims. Assigned to Glens Falls Laboratory, Inc.

A glossmeter for continuous measurement of the paper web between the calender stack and the winder contains means for continuous comparison of the paper with a standard of known reflectivity. This corresponds to U. S. patent 2,578,625 (Dec. 11, 1951); *cf.* B.I.P.C. *22*: 381. 10 figures. W.B.W.

PLASTICS—FIREPROOF

COOPER, ROBERT S. Flame-resistant compositions comprising a transparent resin, chlorinated paraffin wax, and triphenyl stibine. U. S. patent 2,664,411. Filed July 21, 1951. Issued Dec. 29, 1953. 5 claims. Assigned to Diamond Alkali Company. [Cl. 260-28.5]

The composition consists of polystyrene, chlorinated paraffin wax, and triphenyl stibine in the ratio of 70:10:20 and may be molded to produce clear, light-amber, pliable articles. W.B.W.

PLASTICS—PAPER-BASE

VAN BECKUM, WILLIAM G., and ESTERER, ARNULF K. Method of impregnating and laminating fibrous materials with lignin. U. S. patent 2,664,377. Filed April 24, 1950. Issued Dec. 29, 1953. 5 claims. Assigned to Weyerhaeuser Timber Company. [Cl. 154-132]

A fibrous raw material such as paper or insulating board is impregnated with an aqueous solution of ammonium salts of lignin acids and, optionally, a thermosetting resin; the sheet is then dried and heat and pressure are applied to decompose the salt into volatile ammonia and water-insoluble lignin and at the same time compress the bonded fibers to obtain the desired properties. W.B.W.

ROOFING FELTS

FASOLD, GEORGE A., and CALLAHAN, HOWARD E. Method of coating roofing material. U. S. patent 2,661,303. Filed April 7, 1950. Issued Dec. 1, 1953. 3 claims. Assigned to The Philip Carey Manufacturing Company. [Cl. 117-5]

A method of distributing mineral granules on a web of roofing material is described, wherein certain modifications are incorporated in a Norwood Blender to produce desirable shading of the granules deposited on a web of asphaltic-coated prepared roofing. 4 figures. W.B.W.

SETUP BOXES

BROOKS, LEWIS C. Consumer type container. U. S. patent 2,661,139. Filed Feb. 10, 1950. Issued Dec. 1, 1953. 6 claims. Assigned one third to Ira Milton Jones. [Cl. 229-23]

The hinged cover of the container is telescoped over a flange on the upper edge of the carton body, the flange comprising a folded section of the carton body. This shouldered construction provides an unrestricted opening of increased strength and rigidity with the sides of the cover flush with the front and side walls of the container. 10 figures. W.B.W.

SHIPPING CONTAINERS

ETRA, BERNARD, and ETRA, IRVING. Corrugated carton. U. S. patent 2,663,490. Filed March 9, 1950. Issued Dec. 22, 1953. 10 claims. [Cl. 229-38]

A corrugated-board carton is provided with slitted extensions on all end panels and a spacer of the same material. The spacer and the extensions, which are folded into the carton, form sections in which from 6 to 12 articles may be separately packed on a single level. 4 figures. R.A.S.

GEORGE, WALTER C., and BOUSQUET, JOHN A. Containers. Canadian patent 496,475. Filed Dec. 10, 1952. Issued Sept. 29, 1953. 5 claims. Assigned to Gaylord Container Corporation.

Corrugated paperboard containers for shipping blocks of synthetic rubber comprise a series of telescoping tubular sections of graduated lengths resting on a shallow tray, thus providing the greatest sidewall support nearest the base of the carton. This corresponds to U. S. patent 2,634,038 (April 7, 1953); *cf.* B.I.P.C. 23: 694. 9 figures. W.B.W.

HENDRICKSON, JACOB W., JR. Shipping container with carrying handle. U. S. patent 2,661,142. Filed Sept. 10, 1949. Issued Dec. 1, 1953. 1 claim. Assigned to Container Corporation of America. [Cl. 229-37]

A pair of handle elements are scored into a paperboard shipping carton blank and retain their position in the sides of the carton during shipment. The user may free the handles from the carton wall and fold them together to form a double handle above the container. 5 figures. W.B.W.

HILL, IRVING, and MILLER, GEORGE L. Case. U. S. patent 2,663,491. Filed Jan. 16, 1950. Issued Dec. 22, 1953. 3 claims. Assigned to The Lawrence Paper Company. [Cl. 229-39]

A means of closing cases formed of corrugated, solid-fiber, or similar stiff board is provided by scores spaced diagonally in the corners of one pair of opposite end flaps and receiving slots and skid tabs in the second. The skid tabs are cut from the carton and serve to guide the corner into position for interlocking. 10 figures. R.A.S.

HUTT-BRENNING, VINCENT A. Manufacture of containers from fiberboard and like sheet material. U. S. patent 2,660,971. Filed Sept. 4, 1946. Issued Dec. 1, 1953. 3 claims. [Cl. 113-116]

A method of joining adjacent walls of fiberboard containers with thin metal strips is claimed. These strips clamp around the edge of the fiberboard sheet and engage the edge of the adjoining side in a groove formed by bending the fiberboard and metal into a channel where barbs stamped into the metal lock the edge of the board in place when the groove is forcibly closed by a clinching operation. Several corner-locking devices to be employed in conjunction with the metal strips are also claimed. 18 figures. W.B.W.

MORRIS, MERCHANT U. Flower shipping case. U. S. patent 2,661,144. Filed Jan. 31, 1951. Issued Dec. 1, 1953. 1 claim. [Cl. 229-87]

Semicylindrical sections of molded pulp or pressed fiberboard with protruding lips at one edge are joined together with a hinge such as fabric tape to enclose heads of flower blooms without danger of their touching one another or the container wall. Cushions of sponge rubber engage the stems between the protruding lips, with the container held in the closed position by metal clips. 2 figures. W.B.W.

STORER, WILLIAM C., and ROTRUCK, ADELBERT L. Carton. U. S. patent 2,662,638. Filed Aug. 18, 1949. Issued Dec. 15, 1953. 3 claims. Assigned to Celanese Corporation of America. [Cl. 206-65]

A construction for storing and shipping bobbins of yarn is formed on a pallet with supporting legs; pins arranged on the pallet hold the first layer in place. Shelves provided with pins which extend below and above engage two layers of bobbin cores. The entire arrangement is fitted with a protective cover of corrugated board, cardboard, etc. and bound with steel straps. 7 figures. R.A.S.

SLIME PREVENTION

DEAN, CHARLES W. Slime measuring unit. U. S. patent 2,660,884. Filed July 2, 1948. Issued Dec. 1, 1953. 2 claims. Assigned to Buckman Laboratories, Inc. [Cl. 73-53]

The device comprises a tank divided by baffles into an inlet compartment (which maintains a constant head) and a treating compartment with overflow chambers on either side. The wood test panel of convenient size is supported vertically within the treating compartment, and the water under test is directed upward in a uniform flow around the panel and over the baffles to the discharge chambers. Slime accumulation on the panel is scraped manually into a vessel and weighed to establish an empirical value for the slime accumulation during a given period. 3 figures. W.B.W.

SULFITE WASTE LIQUOR

NELSON, BJORN A., and MANNBRO, NILS V. Process for utilizing the dry content of sulphite waste liquor. Canadian patent 498,716. Filed March 31, 1948. Issued Dec. 29, 1953. 3 claims; *cf.* B.I.P.C. 21 : 498.

Sulfite waste liquor (exclusively or diluted with water) is used for dissolving the smelt from a kraft recovery furnace, then causticized and used as cooking liquor in the production of kraft pulp. The sulfite liquor may be used directly from the mill or may be the distilling refuse after fermentation and may be partially causticized before dissolving the smelt by using it as a wash for the lime sludge. Kraft pulp produced with the above liquor is claimed to be equal in all respects to that produced by the usual method and the black liquor carries the solids from the sulfite liquor through the recovery furnace. W.B.W.

PLUMP, RALPH E., and CARROLL, JAMES W. Urea and/or thiourea-aldehyde-sulfite waste liquor condensation product. U. S. patent 2,664,408. Filed Feb. 11, 1950. Issued Dec. 29, 1953. 3 claims. Assigned to The Pennsylvania Salt Manufacturing Company. [Cl. 260-17.5]

An inhibitor suitable for addition to metal pickling baths is made by reacting a solution of urea and thiourea with spent sulfite liquor (containing about 12% solids) and formaldehyde, then precipitating the product by addition of hydrochloric acid. This is similar to Canadian patent 486,583 (Sept. 16, 1952); *cf.* B.I.P.C. 23: 223. W.B.W.

ROSENQVIST, SVEN O. Process for the preparation of alcohol. Canadian patent 496,524. Filed Feb. 8, 1946. Issued Sept. 29, 1953. 2 claims. Assigned to Svenska Jästfabriks Aktiebolaget.

A process for the production of alcohol from spent sulfite liquor is claimed wherein the liquor is mixed with molasses to increase the sugar content; the mixture is inoculated with yeast and fermented, and the alcohol recovered by distillation. W.B.W.

THOMSEN, ALFRED M. Method of making a lignin fertilizer base. U. S. patent 2,663,628. Filed June 29, 1950. Issued Dec. 22, 1953. 1 claim. [Cl. 71-25]

The use of spent calcium-base sulfite liquor as the starting material for a liquid fertilizer is claimed. Ammonia is substituted to precipitate the lime, and the product is enriched with phosphorus by the addition of ammonium phosphate or ammonium hypophosphite. W.B.W.

TALL OIL

CHARLES, FRANK R., and DIXON, JULIAN A. Manufacture of cellulose. U. S. patent 2,664,360. Filed Aug. 20, 1951. Issued Dec. 29, 1953. 6 claims. Assigned to Canadian International Paper Company. [Cl. 106-123]

A refined tall oil (e.g., Acintol D) acid amide is reacted with ethylene oxide and the product sprayed on the pulp sheet during drying. The viscose produced from pulps treated with from 0.01 to 0.2% of the above is claimed to have superior strength and spinning properties; *cf.* also B.I.P.C. 24: 492. W.B.W.

GLYNN, EMMETT P., and HOFFERTH, BURT F. Process for treating tall oil. U. S. patent 2,662,849. Filed June 7, 1946. Issued Dec. 15, 1953. 4 claims. Assigned to Armour and Company. [Cl. 202-71]

A method of treating tall oil is claimed wherein the oil is fractionally distilled to produce palmitic acid, then a second fraction consisting of oleic and linoleic acids is removed from which the oleic acid is fractionally crystallized in the solid phase. In the fractional-crystallization operation improved results are obtained when solvents are employed. Acetone is especially suitable, but methyl alcohol, hexane, etc., or mixtures of solvents may be utilized. W.B.W.

HARRIS, JAY C., and KOSMIN, MILTON. Detergent composition. U. S. patent 2,572,805. Filed Oct. 17, 1947. Issued Oct. 23, 1951. 13 claims. Assigned to Monsanto Chemical Company. [Cl. 252-140]

A detergent composition which prevents the formation of grease balls in washing comprises essentially the condensation product of tall oil and ethylene oxide. W.B.W.

JESSEN, CHRISTIAN C. Glass color vehicle. U. S. patent 2,607,701.

Filed March 2, 1949. Issued Aug. 19, 1952. 2 claims. Assigned to E. I. du Pont de Nemours & Company. [Cl. 106-123]

Phosphorated tall oil (5-10%) is claimed to be a suitable dispersion control agent in the preparation of vehicles for glass colors with a melting point slightly above room temperature. W.B.W.

KIRKPATRICK, WILLARD H. Process for resolving emulsions. U. S. patent 2,568,743. Filed Dec. 14, 1948. Issued Sept. 25, 1951. 4 claims. Assigned to Visco Products Company. [Cl. 252-341]

Blown tall oil and triethanolamine or the like are reacted at 250°C., and a suitable hydrocarbon vehicle (such as sulfur dioxide extract) is added to yield a product which will resolve water-in-oil emulsions. W.B.W.

KIRKPATRICK, WILLARD H. Process for resolving emulsions. U. S. patent 2,572,868. Filed Dec. 28, 1948. Issued Oct. 30, 1951. 5 claims. Assigned to Visco Products Company. [Cl. 252-341]

This is very similar to U. S. patent 2,568,743 (Sept. 25, 1951); *cf.* abstract above. W.B.W.

KIRKPATRICK, WILLARD H., and KOCHER, EARL T. Mixed ester amine polybasic acid compositions. U. S. patent 2,568,747. Filed June 11, 1949. Issued Sept. 25, 1951. 9 claims. Assigned to Visco Products Company. [Cl. 260-22]

This is very similar to U. S. patent 2,568,741 (Sept. 25, 1951); *cf.* abstract below. W.B.W.

KIRKPATRICK, WILLARD H., and KOCHER, EARL T. Process and compositions for resolving petroleum emulsions. U. S. patent 2,568,741. Filed March 26, 1948. Issued Sept. 25, 1951. 4 claims. Assigned to Visco Products Company. [Cl. 252-341]

Water-in-oil emulsions of the type frequently found in the petroleum industry are resolved into their components by a product made by reacting blown tall oil, triethanolamine, an acidic salt such as zinc chloride, and a polyhydric alcohol (e.g., polyethylene glycol) at elevated temperatures with agitation. W.B.W.

KOKATNUR, VAMAN R. Separation of salts of organic acids. U. S. patent 2,662,880. Filed Sept. 20, 1948. Issued Dec. 15, 1953. 3 claims. [Cl. 260-97.6]

Tall oil soaps containing a mixture of resin and fatty acids are first dried with a solvent such as dioxane or methyl Cellosolve. The two soaps are then separated by use of a solvent consisting of a ketone (acetone, methyl propyl ketone, etc.) containing from 5 to 8% water, and the rosin acid is separated from the fatty acid by centrifugal separation or filtration and subsequent evaporation of the solvent. W.B.W.

SEGESSEMANN, ERNEST, and MOLNAR, NICHOLAS M. Tall oil treatment. Canadian patent 498,717. Filed June 14, 1949. Issued Dec. 29, 1953. 5 claims.

Saturated fatty acids are produced from tall oil by treatment of a sodium or potassium soap of tall oil with sodium or potassium hydroxide at 230-290°C. under a pressure of 5-20 atm. for six hours. This is the same as U. S. patent 2,481,356 (Sept. 6, 1949); *cf.* B.I.P.C. 20: 463. W.B.W.

YOUNG, CLARENCE B. F. Buffing compounds. U. S. patent 2,570,904. Filed Jan. 24, 1949. Issued Oct. 9, 1951. 6 claims. Assigned to National Southern Products Corporation. [Cl. 51-293]

Tall oil, mixed with a hydrogenated fatty acid, is claimed to provide a satisfactory and economical vehicle for the abrasive in buffing compounds such as emery, pumice, precipitated chalk, tripoli, and the like. W.B.W.

TEXTILE INDUSTRY AND FABRICS—FIREPROOFING

JENKINS, RUSSELL L. Method for rendering cellulosic materials fire resistant with phosphorous oxychloride-anhydrous ammonia reaction products and products produced thereby. U. S. patent 2,661,311. Filed June 21, 1950. Issued Dec. 1, 1953. 2 claims. Assigned to Monsanto Chemical Company. [Cl. 117-137]

A flameproofing composition for cellulosic products is produced by reacting phosphorus oxychloride in an inert solvent with anhydrous ammonia, heating to distill off the solvent, and extracting the solids with anhydrous ammonia. The product is soluble in water, glycerin, ethylene glycol, and formamide, may be used for impregnation of fabrics, and then be made insoluble by heating. W.B.W.

MALOWAN, JOHN E. Phosphorous oxychloride-anhydrous ammonia reaction products and water-soluble resin compositions for rendering cellulosic materials fire resistant. U. S. patent 2,661,342. Filed June 21, 1950. Issued Dec. 1, 1953. 5 claims. Assigned to Monsanto Chemical Company. [Cl. 260-39]

Cellulosic fabric is impregnated with a mixture containing 30% of the water-soluble alkaline condensation product of phosphorus oxychloride and anhydrous ammonia to which is added 1.5% of a water-soluble resin condensation product of urea and formaldehyde. After drying and curing at 140°C. for 30 minutes, the material became flame-resistant and showed no signs of afterglow after three washings. W.B.W.

NIELSEN, MORRIS L. Phosphorous oxychloride and ammonia reaction products in flame retarding compositions applied to cellulosic materials. U. S. patent 2,661,263. Filed June 21, 1950. Issued Dec. 1, 1953. 7 claims. Assigned to Monsanto Chemical Company. [Cl. 8-115.6]

Fabrics treated with the nitrogen-phosphorus containing compounds claimed in U. S. patent 2,661,311 (Dec. 1, 1953; *cf.* abstract above) are further treated to improve flame and afterglow resistance by impregnating with a mixture of antimony and titanium chlorides, then converting these chlorides to oxides by treatment with an alkali solution. W.B.W.

TRANSPARENT CONTAINERS

ARRANGA, EDMUND V., and MALLEY, ANTHONY J. Carton. U. S. patent 2,661,891. Filed Jan. 9, 1950. Issued Dec. 8, 1953. 3 claims. [Cl. 229-30]

Relatively stiff cardboard is formed into a tray with upstanding semicircular end pieces. The arched top is made up of two sections of transparent plastic material glued along the edges of the tray and secured in notches at the center of the end piece. 5 figures. R.A.S.

PAIGE, RICHARD E. Tubular container for articles of merchandise. U. S. patent 2,663,489. Filed Nov. 28, 1947. Issued Dec. 22, 1953. 4 claims. [Cl. 229-37]

This container construction of cellulose acetate, cardboard, or other sheet material comprises two units, each of a rectangular bottom section integral with an arched top section and a flap at one end which is folded down and attached to the bottom. The excess material at the corners is folded inwardly. The two units are telescoped to form the container. 8 figures. R.A.S.

VA-PURGE PROCESS

ROSS, JAMES H., HART, JOHN S., STRAPP, RICHARD K., and MAASS, OTTO. Production of cellulose pulp. Canadian patent 498,301. Filed July 28, 1949. Issued Dec. 8, 1953. 12 claims. Assigned to Pulp and Paper Research Institute of Canada.

Steam pretreatment (Va-Purge process) of wood chips produces an optimum condition for penetration of cooking liquors into the chip. Rapid release of steam pressure purges excess water from the chip in the form of steam. This is similar to U. S. patent 2,640,774 (June 2, 1953); *cf.* B.I.P.C. 23: 854. 2 figures. W.B.W.

VANILLIN

BOCK, LOUIS H. Polyesters made from dibasic acids derived from vanillin. U. S. patent 2,662,871. Filed Nov. 28, 1950. Issued Dec. 15, 1953. 2 claims. Assigned to Rayonier Incorporated. [Cl. 260-47]

Linear polyesters with a high degree of chemical stability, low solubility in water and in organic solvents, and ability to absorb coloring materials suitable for forming filaments of high tensile strength are prepared by condensing at 200-300°C. under vacuum a bis-ester of a dihydric alcohol with the dibasic acids of U. S. patent 2,630,454 (March 3, 1953); *cf.* B.I.P.C. 23: 780. I.A.P.

WAXES

HENN, ALBERT C., and PETERSON, HARRY W., JR. Process of making refined sugar cane wax. U. S. patent 2,662,907. Filed Oct. 27, 1950. Issued Dec. 15, 1953. 4 claims. Assigned to Standard Oil Development Company. [Cl. 260-412.5]

Sugar-cane waxes are recovered from the acidified mud by extraction with hot isopropanol and filtering of the alcohol solution. Separation of the wax from the filtrate is accomplished by cooling the filtrate to 5°C. to precipitate the wax and renewed filtration. W.B.W.

WET STRENGTH

SUEN, TZENG J., and SCHILLER, ARTHUR M. Aminoalkane sulfuric acid modified urea-formaldehyde resins and process of preparing same. U. S. patent 2,646,419. Filed Nov. 2, 1949. Issued July 21, 1953. 12 claims. Assigned to American Cyanamid Company. [Cl. 260-70]

A urea-formaldehyde resin is reacted with an aminosulfuric acid compound under acid conditions to produce a resin suitable for increasing wet strength of paper. Pulps treated with 3% resin, formed into a sheet, and cured for two minutes at 110°C. produced a paper with improved wet strength. W.B.W.

WHITE LIQUOR

KAHN, JAMES M. Cooking liquor treatment. Canadian patent 496,491. Filed May 9, 1949. Issued Sept. 29, 1953. 5 claims. Assigned to Infilco Incorporated.

White liquor for use in alkaline pulping is centrifuged and the turbid filtrate treated with a magnesium compound to coagulate the turbidity and produce a precipitate which rapidly settles out. This is the same as U. S. patent 2,592,907 (April 15, 1952); *cf.* B.I.P.C. 22: 721. 2 figures. W.B.W.

WOOD—EXTRACTIVES

KURTH, ERVIN F. Extraction of valuable products from bark. U. S. patent 2,662,893. Filed March 28, 1950. Issued Dec. 15, 1953. 42 claims. Assigned to State of Oregon, acting by and through the Oregon State Board of Forestry. [Cl. 260-345.2]

The recovery of bark components from Douglas-fir, ponderosa pine, and Jeffrey pine (such as various waxes, tannin, phlobaphenes, etc.) is claimed by a selective extraction of the bark material with hot water or suitable solvents, depending upon the materials to be recovered and the order of their separation. The recovery of a new compound from Douglas-fir bark, dihydroquercetin, useful in the synthesis of pharmaceutical and biological products, is also claimed. 5 figures. W.B.W.

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